# Chapter 6

# Troubleshooting

6

# Troubleshooting

## Overview

The information in this chapter addresses some of the scenarios likely to be encountered by Customer Field Engineering (CFE) team members. This troubleshooting guide was created as an interim reference document for use in the field. It provides basic “what to do if” basic troubleshooting suggestions when the BTS equipment does not perform per the procedure documented in the manual.

Comments are consolidated from inputs provided by CFEs in the field and information gained form experience in Motorola labs and classrooms.

## Cannot Log into Cell-Site

Follow the procedure in Table 6-1 to troubleshoot any Login Failure problem during normal operation.

**Table 6-1:** Login Failure Troubleshooting Procedure

| ✓ | Step | Action |
|---|---|---|
| | 1 | If MGLI3 LED is solid RED, it implies a hardware failure. Reset MGLI3 by re-seating it. If this persists, install RGLI3 card in MGLI3 slot and retry. A Red LED may also indicate no Ethernet termination at top of frame. |
| | 2 | Verify that T1 is disconnected at the Channel Signaling Unit (CSU). If T1 is still connected, verify the CBSC has disabled the BTS. |
| | 3 | Try *‘ping’*ing the MGLI3. |
| | 4 | Verify the LMF is connected to the **Primary** LMF port (LAN A) in front of the BTS. |
| | 5 | Verify the LMF was configured properly. |
| | 6 | Verify the BTS-LMF cable is RG-58 (flexible black cable of less than 2.5 feet length). |
| | 7 | Verify the Ethernet ports are terminated properly. |
| | 8 | Verify a T-adapter is <u>not</u> used on LMF side port if connected to the BTS front LMF primary port. |
| | 9 | Try connecting to the I/O panel (back of frame). Use Tri-Ax to BNC adapter at the LMF port for this connection. |
| | 10 | Re-boot the CDMA LMF and retry. |
| | 11 | Re-seat the MGLI3 and retry. |
| | 12 | Verify IP addresses are configured properly. |

## Cannot Communicate to Power Meter

Follow the procedure in Table 6-2 to troubleshoot a power meter communication failure.

**Table 6-2:** Troubleshooting a Power Meter Communication Failure

| ✓ | Step | Action |
|---|---|---|
| | 1 | Verify Power Meter is connected to LMF with GPIB adapter. |
| | 2 | Verify cable setup as specified in Chapter 3. |
| | 3 | Verify the GP-IB address of the Power Meter is set to *13*. Refer to Test Equipment setup section of Chapter 3 for details. |
| | 4 | Verify that Com1 port is not used by another application. |
| | 5 | Verify that the communications analyzer is in Talk&Listen, not Control mode. |

## Cannot Communicate to Communications Analyzer

Follow the procedure in Table 6-3 to troubleshoot a communication analyzer failure.

**Table 6-3:** Troubleshooting a Communications Analyzer Communication Failure

| ✓ | Step | Action |
|---|---|---|
| | 1 | Verify analyzer is connected to LMF with GPIB adapter. |
| | 2 | Verify cable setup. |
| | 3 | Verify the GPIB address is set to 18. |
| | 4 | Verify the GPIB adapter DIP switch settings are correct. Refer to Test Equipment setup section for details. |
| | 5 | Verify the GPIB adapter is not locked up. Under normal conditions, only 2 green LEDs must be ‘ON’ (Power and Ready). If any other LED is continuously ‘ON’, then power-cycle the GPIB Box and retry. |
| | 6 | If a Hyperterm window is open for MMI, close it. |
| | 7 | Verify the LMF GPIB address is set to 18 |
| | 8 | Verify the analyzer is in Talk and Listen not Control mode. |



## Code Download Failure

Follow the procedure in Table 6-4 to troubleshoot any code download failure.

**Table 6-4:** Troubleshooting Code Download Failure

| ✓ | Step | Action |
|---|---|---|
| | 1 | Verify T1 is disconnected from the BTS at CSU. |
| | 2 | Verify LMF can communicate with the BTS device using the Status function. |

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| Table 6-4: Troubleshooting Code Download Failure | | |
|---|---|---|
| ✓ | Step | Action |
| | 3 | Communication to MGLI3 must first be established before trying to talk to any other BTS device. MGLI3 must be INS_ACT state (green). |
| | 4 | Verify the card is physically present in the cage and powered-up. |
| | 5 | If card LED is solid RED, it implies hardware failure. Reset card by re-seating it. If this persists, replace card from another slot & retry.<br>**NOTE**<br>The card can only be replaced by a card of the same type. |
| | 6 | Re-seat card and try again. |
| | 7 | If BBX reports a failure message and is OOS_RAM, the code load was OK. Status it. |
| | 8 | If the download portion completes and the reset portion fails, reset the device by selecting the device and reset. |

## Cannot Download DATA to Any Device (Card)

Follow the procedure in Table 6-5 to troubleshoot any data download failure.

| Table 6-5: Troubleshooting Data Download Failure | | |
|---|---|---|
| ✓ | Step | Action |
| | 1 | Re-seat card and repeat code and data load procedure. |
| | 2 | Verify the ROM and RAM code loads are of the same release by statusing the card. Refer to Chapter 3, "Download the BTS" for more information. |



## Cannot ENABLE Device

Before a device can be enabled (placed in-service), it must be in the OOS_RAM state (yellow on the LMF) with data downloaded to the device. The color of the device on the LMF changes to green, once it is enabled.

The three states that devices can be displayed:

- Enabled (green, INS)
- Disabled (yellow, OOS_RAM)
- Reset (blue, OOS_ROM)

Follow the procedure in Table 6-6 to troubleshoot device enable failure.

| Table 6-6: Troubleshooting Device Enable (INS) Failure | | |
|---|---|---|
| ✓ | Step | Action |
| | 1 | Re-seat card and repeat code and data load procedure. |
| | 2 | If CSM cannot be enabled, verify the CDF file has correct latitude and longitude data for cell site location and GPS sync. |

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| Table 6-6: Troubleshooting Device Enable (INS) Failure | | |
|---|---|---|
| ✓ | Step | Action |
| | 3 | Ensure primary CSM is in INS_ACT state.<br>**NOTE**<br>MCCs will not go INS without the CSM being INS. |
| | 4 | Verify 19.6608 MHz CSM clock; MCCs will not go INS otherwise. |
| | 5 | The BBX should not be enabled for ATP tests. |
| | 6 | If MCCs give "invalid or no system time," verify the CSM is enabled. |

## LPA Errors

Follow the procedure in Table 6-7 to troubleshoot any LPA errors.

| Table 6-7: LPA Errors | | |
|---|---|---|
| ✓ | Step | Action |
| | 1 | If LPAs continue to give alarms, even after cycling power at the circuit breakers, then connect an MMI cable to the LPA and set up a Hyperterminal connection. Enter **ALARMS** in the Hyperterminal window. The resulting LMF display may provide an indication of the problem. (Call Field Support for further assistance.) |

## Bay Level Offset Calibration Failure

Follow the procedure in Table 6-8 to troubleshoot a BLO calibration failure.

| Table 6-8: Troubleshooting BLO Calibration Failure | | |
|---|---|---|
| ✓ | Step | Action |
| | 1 | Verify the Power Meter is configured correctly (see the test equipment setup section) and connection is made to the proper TX port. |
| | 2 | Verify the parameters in the bts-#.cdf file are set correctly for the following bands:<br>For 1900 MHz:<br>BandClass=1; FreqBand=16<br>For 800 MHz:<br>BandClass=0; FreqBand=8 |
| | 3 | Verify that no LPA in the sector is in alarm state (flashing red LED). Reset the LPA by pulling the circuit breaker, and after 5 seconds, pushing back in. |
| | 4 | Re-calibrate the Power Meter and verify it is calibrated correctly with cal factors from sensor head. |
| | 5 | Verify GPIB adapter is not locked up. Under normal conditions, only 2 green LEDs must be 'ON' (Power and Ready). If any other LED is continuously 'ON', power-cycle (turn power off and on) the GPIB Box and retry. |
| | 6 | Verify sensor head is functioning properly by checking it with the 1 mW (0 dBm) Power Ref signal. |

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**Table 6-8:** Troubleshooting BLO Calibration Failure

| ✓ | Step | Action |
|---|---|---|
| | 7 | If communication between the LMF and Power Meter is operational, the Meter display will show “*RES :*” |
| | 8 | Verify the combiner frequency is the same as the test freq/chan. |

## Calibration Audit Failure

Follow the procedure in Table 6-9 to troubleshoot a calibration audit failure.

**Table 6-9:** Troubleshooting Calibration Audit Failure

| ✓ | Step | Action |
|---|---|---|
| | 1 | Verify Power Meter is configured correctly (refer to the test equipment setup section of chapter 3). |
| | 2 | Re-calibrate the Power Meter and verify it is calibrated correctly with cal factors from sensor head. |
| | 3 | Verify that no LPA is in alarm state (rapidly flashing red LED). Reset the LPA by pulling the circuit breaker, and, after 5 seconds, pushing back in. |
| | 4 | Verify that no sensor head is functioning properly by checking it with the 1 mW (0 dBm) Power Ref signal. |
| | 5 | After calibration, the BLO data must be re-loaded to the BBX2s before auditing. Click on the BBX(s) and select **Device>Download BLO**<br>Re-try the audit. |
| | 6 | Verify GPIB adapter is not locked up. Under normal conditions, only 2 green LEDs must be ‘ON’ (Power and Ready). If any other LED is continuously ‘ON’, power-cycle (turn power off and on) the GP-IB Box and retry. |

## Forward link problem

If the BTS passes the reduced ATP tests but has a forward link problem during normal operation follow the procedure in Table 6-10 to troubleshoot.

**Table 6-10:** Troubleshooting Forward Link Failure (BTS Passed Reduced ATP)

| ✓ | Step | Action |
|---|---|---|
| | 1 | Perform these additional TX tests to troubleshoot a forward link problem:<br>- TX mask<br>- TX rho<br>- TX code domain |

## Cannot Perform Txmask Measurement

Follow the procedure in Table 6-11 to troubleshoot a TX Mask Measurement failure.

**Table 6-11:** Troubleshooting TX Mask Measurement Failure

| ✓ | Step | Action |
|---|---|---|
| | 1 | Verify that TX audit passes for the BBX(s). |
| | 2 | If performing manual measurement, verify analyzer setup. |
| | 3 | Verify that no LPA in the sector is in alarm state (flashing red LED). Re-set the LPA by pulling the circuit breaker, and, after 5 seconds, pushing it back in. |

## Cannot Perform Rho or Pilot Time Offset Measurement

Follow the procedure in Table 6-12 to troubleshoot a rhoand pilot time offset measurement failure.

**Table 6-12:** Troubleshooting Rho and Pilot Time Offset Measurement Failure

| ✓ | Step | Action |
|---|---|---|
| | 1 | Verify presence of RF signal by switching to spectrum analyzer screen. |
| | 2 | Verify PN offsets displayed on the analyzer is the same as the PN offset in the CDF file. |
| | 3 | Re-load MGLI3 data and repeat the test. |
| | 4 | If performing manual measurement, verify analyzer setup. |
| | 5 | Verify that no LPA in the sector is in alarm state (flashing red LED). Reset the LPA by pulling the circuit breaker, and, after 5 seconds, pushing back in. |
| | 6 | If Rho value is unstable and varies considerably (e.g. .95,.92,.93), this may indicate that the GPS is still phasing (i.e. trying to reach and maintain 0 freq. error). Go to the freq. bar in the upper right corner of the Rho meter and select Hz. Press <Shift-avg> and enter 10, to obtain an average Rho value. This is an indication the GPS has not stabilized before going *INS* and may need to be re-initialized. |



## Cannot Perform Code Domain Power and Noise Floor Measurement

Follow the procedure in Table 6-13 to troubleshoot code domain and noise floor measurement failure.

**Table 6-13:** Troubleshooting Code Domain Power and Noise Floor Measurement Failure

| ✓ | Step | Action |
|---|---|---|
| | 1 | Verify presence of RF signal by switching to spectrum analyzer screen. |
| | 2 | Verify PN offset displayed on analyzer is same as PN offset being used in the CDF file. |
| | 3 | Disable and re-enable MCC (one or more MCCs based on extent of failure). |

## Cannot Perform Carrier Measurement

Follow the procedure in Table 6-14 to troubleshoot carrier measurement failure.

**Table 6-14:** Troubleshooting Carrier Measurement Failure

| ✓ | Step | Action |
|---|---|---|
| | 1 | Perform the test manually, using the spread CDMA signal. Verify High Stability 10 MHz Rubidium Standard is warmed up (60 minutes) and properly connected to test set-up. |

## Multi-FER Test Failure

Follow the procedure in Table 6-15 to troubleshoot multi-FER failure.

**Table 6-15:** Troubleshooting Multi-FER Failure

| ✓ | Step | Action |
|---|---|---|
| | 1 | Verify test equipment set up is correct for a FER test. |
| | 2 | Verify test equipment is locked to 19.6608 and even second clocks. The yellow LED (REF UNLOCK) must be OFF. |
| | 3 | Verify MCCs have been loaded with data and are INS-ACT. |
| | 4 | Disable and re-enable the MCC (one or more based on extent of failure). |
| | 5 | Disable, re-load code and data, and re-enable MCC (one or more MCCs based on extent of failure). |
| | 6 | Verify antenna connections to frame are correct based on the directions messages. |

6

## Problem Description

Many of the Clock Synchronization Manager (CSM) boards may be resolved in the field before sending the boards to the factory for repair. This section describes known CSM problems identified in field returns, some of which are field-repairable. Check these problems before returning suspect CSM boards.

## Intermittent 19.6608 MHz Reference Clock/GPS Receiver Operation

If having any problems with CSM board kit numbers, SGLN1145 or SGLN4132, check the suffix with the kit number. If the kit has version “AB,” then replace with version ‘‘BC’’ or higher, and return model AB to the repair center.

## No GPS Reference Source

Check the CSM boards for proper hardware configuration. RF-GPS (Local GPS) - CSM kit SGLN1145, which should be installed in Slot l, has an on-board GPS receiver; while kit SGLN4132, in Slot 2, does not have a GPS receiver.

Remote GPS (R-GPS) - Kit SGLN4132ED or later, which should be installed in both Slot 1 and Slot 2, does not have a GPS receiver. Any incorrectly configured board *must* be returned to the repair center. *Do not attempt to change hardware configuration in the field.* Also, verify the GPS antenna is not damaged and is installed per recommended guidelines.

## Checksum Failure

The CSM could have corrupted data in its firmware resulting in a non-executable code. The problem is usually caused by either electrical disturbance, or interruption of data during a download. Attempt another download with no interruptions in the data transfer. Return CSM board back to repair center if the attempt to reload fails.

## GPS Bad RX Message Type

This is believed to be caused by a later version of CSM software (3.5 or higher) being downloaded, via LMF, followed by an earlier version of CSM software (3.4 or lower), being downloaded from the CBSC. Download again with CSM software code 3.5 or higher. Return CSM board back to repair center if attempt to reload fails.

## CSM Reference Source Configuration Error

This is caused by incorrect reference source configuration performed in the field by software download. CSM kit SGLN1145 and SGLN4132 must have proper reference sources configured (as shown below) to function correctly.

| CSM Kit No. | Hardware Configuration | CSM Slot No. | Reference Source Configuration |
|---|---|---|---|
| SGLN1145 | With GPS Receiver | 1 | Primary = Local GPS<br>Backup = Either LFR or HSO |
| SGLN4132ED or later | Without GPS Receiver | 2 | Primary = Remote GPS<br>Backup = Either LFR or HSO |

## Takes Too Long for CSM to Come INS

This may be caused by a delay in GPS acquisition. Check the accuracy flag status and/or current position. Refer to the GSM system time/GPS and LFR/HSO verification section in Chapter 3. At least 1 satellite should be visible and tracked for the “surveyed” mode and 4 satellites should be visible and tracked for the “estimated” mode. Also, verify correct base site position data used in “surveyed” mode.

## C-CCP Backplane

The C-CCP backplane is a multi-layer board that interconnects all the C-CCP modules. The complexity of this board lends itself to possible improper diagnoses when problems occur.

## Connector Functionality

The following connector overview describes the major types of backplane connectors along with the functionality of each. This will allow the Cellular Field Engineer (CFE) to:

- Determine which connector(s) is associated with a specific problem type.
- Allow the isolation of problems to a specific cable or connector.

### Primary “A” and Redundant “B” ISB (Inter Shelf Bus) connectors

The 40 pin ISB connectors provide an interface bus from the master GLI3 to all other GLI3s in the modem frame. Its basic function is to provide clock synchronization from the master GLI3 to all other GLI3s in the frame.

The ISB is also provides the following functions:

- Groom span line when a single span is used for multiple cages.
- Provide MMI connection to/from the master GLI3 to cell site modem.
- Provide interface between GLI3s and the AMR (for reporting BTS alarms).



### Span Line Connector

The span line input is an 8 pin RJ-45 connector that provides a primary and secondary (if used) span line interface to each GLI3 in the C-CCP shelf. The span line is used for MM/EMX switch control of the Master GLI3 and also all the BBX traffic.

### Power Input (Return A, B, and C connectors)

Provides a +27 Volt input for use by the power supply modules.

### Power Supply Module Interface

Each power supply module has a series of three different connectors to provide the needed inputs/outputs to the C-CCP backplane. These include a VCC/Ground input connector, a Harting style multiple pin interface, and a +15 V/Analog Ground output connector. The Transceiver Power Module converts 27/48 Volts to a regulated +15, +6.5, +5.0 Volts to be used by the C-CCP shelf cards.

### GLI3 Connector

This connector consists of a Harting 4SU digital connector and a 6-conductor coaxial connector for RDM distribution. The connectors provide inputs/outputs for the GLI3s in the C-CCP backplane.

### GLI3 Ethernet “A” and “B” Connections

These BNC connectors are located on the C-CCP backplane and routed to the GLI3 board. This interface provides all the control and data communications between the master GLI3 and the other GLI3, between gateways, and for the LMF on the LAN.

### BBX2 Connector

Each BBX connector consists of a Harting 2SU/1SU digital connector and two 6-conductor coaxial connectors. These connectors provide DC, digital, and RF inputs/outputs for the BBXs in the C-CCP backplane.

### CIO Connectors

- RX RF antenna path signal inputs are routed through RX Tri-Filters (on the I/O plate), and via coaxial cables to the two MPC modules - the six “A” (main) signals go to one MPC; the six “B” (diversity) to the other. The MPC outputs the low-noise-amplified signals via the C-CCP backplane to the CIO where the signals are split and sent to the appropriate BBX.
- A digital bus then routes the baseband signal through the BBX, to the backplane, then on to the MCC slots.
- Digital TX antenna path signals originate at the MCC24s. Each output is routed from the MCC slot via the backplane appropriate BBX.
- TX RF path signal originates from the BBX, through the backplane to the CIO, through the CIO, and via multi-conductor coaxial cabling to the LPAs in the LPA shelf.



## C-CCP Backplane Troubleshooting Procedure

The following table provides a standard procedure for troubleshooting problems that appear to be related to a defective C-CCP backplane. The table is broken down into possible problems and steps which should be taken in an attempt to find the root cause.

| | |
|---|---|
| **NOTE** | It is important to note that all steps be followed before replacing ANY C-CCP backplane. |

## Digital Control Problems

### No GLI3 Control via LMF (all GLI3s)

Follow the procedure in Table 6-16 for problems with GLI3 control.

**Table 6-16:** No GLI3 Control via LMF (all GLI3s)

| Step | Action |
|---|---|
| 1 | Check the ethernet for proper connection, damage, shorts, or opens. |
| 2 | Verify C-CCP backplane Shelf ID DIP switch is set correctly. |
| 3 | Visually check the master GLI3 connector (both board and backplane) for damage. |
| 4 | Replace the master GLI3 with a known good GLI3. |

## No GLI3 Control through Span Line Connection (All GLI3s)

Follow the procedure in Table 6-17 for problems with GLI3 control.

**Table 6-17:** No GLI3 Control through Span Line Connection (Both GLI3s)

| Step | Action |
|---|---|
| 1 | Verify C-CCP backplane Shelf ID DIP switch is set correctly. |
| 2 | Verify that the BTS and GLI3s are correctly configured in the OMCR/CBSC data base. |
| 3 | Visually check the master GLI3 connector (both board and backplane) for damage. |
| 4 | Replace the master GLI3 with a known good GLI3. |
| 5 | Check the span line inputs from the top of the frame to the master GLI3 for proper connection and damage. |

## MGLI3 Control Good - No Control over Co-located GLI3

Follow the procedure in Table 6-18 for problems with GLI3 control.

**Table 6-18:** MGLI3 Control Good - No Control over Co-located GLI3

| Step | Action |
|---|---|
| 1 | Verify that the BTS and GLI3s are correctly configured in the OMCR CBSC data base. |
| 2 | Check the ethernet for proper connection, damage, shorts, or opens. |
| 3 | Visually check all GLI3 connectors (both board and backplane) for damage. |
| 4 | Replace the remaining GLI3 with a known good GLI3. |



## No AMR Control (MGLI3 good)

Follow the procedure in Table 6-19 for problems with AMR control.

**Table 6-19:** MGLI3 Control Good - No Control over AMR

| Step | Action |
|---|---|
| 1 | Visually check the master GLI3 connector (both board and backplane) for damage. |
| 2 | Replace the master GLI3 with a known good GLI3. |
| 3 | Replace the AMR with a known good AMR. |

## No BBX Control in the Shelf

Follow the procedure in Table 6-20 for problems with co-located GLI3.

**Table 6-20:** MGLI3 Control Good - No Control over Co-located GLI3s

| Step | Action |
|---|---|
| 1 | Visually check all GLI3 connectors (both board and backplane) for damage. |
| 2 | Replace the remaining GLI3 with a known good GLI3. |
| 3 | Visually check BBX connectors (both board and backplane) for damage. |
| 4 | Replace the BBX with a known good BBX. |

## No (or Missing) Span Line Traffic

Follow the procedure in Table 6-21 for problems with span line traffic.

**Table 6-21:** BBX Control Good - No (or Missing) Span Line Traffic

| Step | Action |
|---|---|
| 1 | Visually check all GLI3 connectors (both board and backplane) for damage. |
| 2 | Replace the remaining GLI3 with a known good GLI3. |
| 3 | Visually check all span line distribution (both connectors and cables) for damage. |
| 4 | If the problem seems to be limited to 1 BBX, replace the BBX with a known good BBX. |

## No (or Missing) MCC24 Channel Elements

Follow the procedure in Table 6-22 for problems with channel elements.

**Table 6-22:** No MCC-1X/MCC24E/MCC8E Channel Elements

| Step | Action |
|---|---|
| 1 | Verify channel elements on a co-located MCC of the same type (CDF MccType codes: MCC8E = 0; MCC24E = 2; MCC-1X = 3) |
| 2 | Check MCC connectors (both module and backplane) for damage. |
| 3 | If the problem seems to be limited to one MCC, replace it with a known good MCC of the same type. |
| 4 | If no channel elements on any MCC, verify clock reference to CIO. |

# DC Power Problems

| WARNING | Potentially lethal voltage and current levels are routed to the BTS equipment. This test must be carried out with a second person present, acting in a safety role. Remove all rings, jewelry, and wrist watches prior to beginning this test. |
|---|---|

## No DC Input Voltage to Power Supply Module

Follow the procedure in Table 6-23 for problems with DC input voltage.

**Table 6-23:** No DC Input Voltage to Power Supply Module

| Step | Action |
|---|---|
| 1 | Verify DC power is applied to the BTS frame. Verify there are no breakers tripped.<br>*** IMPORTANT**<br>If a breaker has tripped, remove all modules from the applicable shelf supplied by the breaker and attempt to reset it.<br>- If breaker trips again, there is probably a cable or breaker problem within the frame.<br>- If breaker does not trip, there is probably a defective module or sub-assembly within the shelf. |
| 2 | Verify that the C-CCP shelf breaker on the BTS frame breaker panel is functional. |
| 3 | Use a voltmeter to determine if the input voltage is being routed to the C-CCP backplane by measuring the DC voltage level on the PWR_IN cable.<br>- If the voltage is not present, there is probably a cable or breaker problem within the frame.<br>- If the voltage is present at the connector, reconnect and measure the level at the "VCC" power feed clip on the distribution backplane. If the voltage is correct at the power clip, inspect the clip for damage. |
| 4 | If everything appears to be correct, visually inspect the power supply module connectors. |
| 5 | Replace the power supply module with a known good module. |
| 6 | If steps 1 through 4 fail to indicate a problem, the C-CCP backplane failure (possibly an open trace) has occurred. |

## No DC Voltage (+5, +6.5, or +15 Volts) to a Specific GLI3, BBX2, or Switchboard

Follow the procedure in Table 6-24 for problems with DC input voltage.

**Table 6-24:** No DC Input Voltage to any C-CCP Shelf Module

| Step | Action |
|---|---|
| 1 | Verify steps outlined in Table 6-23 have been performed. |
| 2 | Inspect the defective board/module (both board and backplane) connector for damage. |
| 3 | Replace suspect board/module with known good board/module. |

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Follow the procedure in Table 6-25 for problems with DC input voltage.

| **Table 6-25:** No DC Input Voltage to any C-CCP Shelf Module | |
|---|---|
| **Step** | **Action** |
| 1 | Inspect all Harting Cable connectors and back-plane connectors for damage in all the affected board slots. |
| 2 | Perform steps outlined in the RF path troubleshooting flowchart in this manual. |

## RFDS

The RFDS is used to perform Pre-Calibration Verification and Post-Calibration Audits which limit-check the RFDS-generate and reported receive levels of every path from the RFDS through the directional coupler coupled paths. In the event of test failure, refer to the following tables.

## All tests fail

Follow the procedure in Table 6-26 for problems with RFDS.

| **Table 6-26:** RFDS Fault Isolation - All tests fail | |
|---|---|
| **Step** | **Action** |
| 1 | Check the calibration equipment for proper operation by manually setting the signal generator output attenuator to the lowest output power setting and connecting the output port to the spectrum analyzer rf input port. |
| 2 | Set the signal generator output attenuator to -90 dBm, and switch on the rf output. Verify that the spectrum analyzer can receive the signal, indicate the correct signal strength, (accounting for the cable insertion loss), and the approximate frequency. |
| 3 | Visually inspect RF cabling. Make sure each directional coupler forward and reflected port connects to the RFDS antenna select unit on the RFDS. |
| 4 | Check the wiring against the site documentation wiring diagram or the *BTS Site Installation* manual. |
| 5 | Verify RGLI and TSU have been downloaded. |
| 6 | Check to see that all RFDS boards show green on the front panel indicators. Visually check (both board and backplane) for damage. |
| 7 | Replace any boards that do not show green with known good boards one at a time in the following order. Re-test after each is replaced.<br>- RFDS ASU board.<br>- RFDS Transceiver board. |

## All RX and TX paths fail

If every receive or transmit path fails, the problem most likely lies with the rf converter board or the transceiver board. Refer to Table 6-27 for fault isolation procedures.

**Table 6-27:** RFDS Fault Isolation - All RX and TX paths fail

| Step | Action |
|---|---|
| 1 | Visually check the master RF converter board (both board and backplane) for damage. |
| 2 | Replace the RF converter board with a known good RF converter board. |
| 3 | Visually check RXCVR TSU (both board and backplane) for damage. |
| 4 | Replace the TSU with a known good TSU. |

## All tests fail on a single antenna

If all path failures are on one antenna port, forward and/or reflected, follow the procedures in Table 6-28 checks.

**Table 6-28:** RFDS Fault Isolation - All tests fail on single antenna path

| Step | Action |
|---|---|
| 1 | Visually inspect the site interface cabinet internal cabling to the suspect directional coupler antenna port. |
| 2 | Verify the forward and reflected ports connect to the correct RFDS antenna select unit positions on the RFDS backplane. Refer to the installation manual for details. |
| 3 | Visually check ASU connectors (both board and backplane) for damage. |
| 4 | Replace the ASU with a known good ASU. |
| 5 | Replace the RF cables between the affected directional coupler and RFDS.<br>**NOTE**<br>Externally route the cable to bypass suspect segment. |



## Module Status Indicators

Each of the non-passive plug-in modules has a bi-color (green & red) LED status indicator located on the module front panel. The indicator is labeled PWR/ALM. If both colors are turned on, the indicator is yellow.

Each plug-in module, except for the fan module, has its own alarm (fault) detection circuitry that controls the state of the PWR/ALM LED.

The fan TACH signal of each fan module is monitored by the AMR. Based on the status of this signal the AMR controls the state of the PWR/ALM LED on the fan module.

## LED Status Combs All Modules (except GLI3, CSM, BBX2, MCC8/24E)

### PWR/ALM LED

The following list describes the states of the module status indicator.

- Solid GREEN - module operating in a normal (fault free) condition.
- Solid RED - module is operating in a fault (alarm) condition due to electrical hardware failure.

Note that a fault (alarm) indication may or may not be due to a complete module failure and normal service may or may not be reduced or interrupted.

## DC/DC Converter LED Status Combinations

The PWR CNVTR has its own alarm (fault) detection circuitry that controls the state of the PWR/ALM LED.

### PWR/ALM LED

The following list describes the states of the bi-color LED.

- Solid GREEN - module operating in a normal (fault free) condition.
- Solid RED - module is operating in a fault (alarm) condition due to electrical hardware problem.

## CSM LED Status Combinations



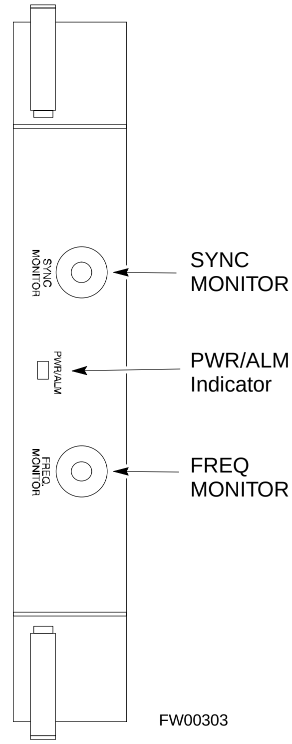
### PWR/ALM LED

The CSMs include on-board alarm detection. Hardware and software/firmware alarms are indicated via the front panel indicators.

After the memory tests, the CSM loads OOS-RAM code from the Flash EPROM, if available. If not available, the OOS-ROM code is loaded from the Flash EPROM.

- Solid GREEN - module is INS_ACT or INS_STBY no alarm.
- Solid RED - Initial power up or module is operating in a fault (alarm) condition.
- Slowly Flashing GREEN - OOS_ROM no alarm.
- Long RED/Short GREEN - OOS_ROM alarm.
- Rapidly Flashing GREEN - OOS_RAM no alarm or INS_ACT in DUMB mode.
- Short RED/Short GREEN - OOS_RAM alarm.
- Long GREEN/Short RED - INS_ACT or INS_STBY alarm.
- Off - no DC power or on-board fuse is open.
- Solid YELLOW - After a reset, the CSMs begin to boot. During SRAM test and Flash EPROM code check, the LED is yellow. (If SRAM or Flash EPROM fail, the LED changes to a solid RED and the CSM attempts to reboot.)

**Figure 6-1:** CSM Front Panel Indicators & Monitor Ports

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### FREQ Monitor Connector

A test port provided at the CSM front panel via a BNC receptacle allows monitoring of the 19.6608 MHz clock generated by the CSM. When both CSM 1 and CSM 2 are in an in-service (INS) condition, the CSM 2 clock signal frequency is the same as that output by CSM 1.

The clock is a sine wave signal with a minimum amplitude of +2 dBm (800 mVpp) into a 50 Ω load connected to this port.

### SYNC Monitor Connector

A test port provided at the CSM front panel via a BNC receptacle allows monitoring of the “Even Second Tick” reference signal generated by the CSMs.

At this port, the reference signal is a TTL active high signal with a pulse width of 153 nanoseconds.

**MMI Connector** - Only accessible behind front panel. The RS-232 MMI port connector is intended to be used primarily in the development or factory environment, but may be used in the field for debug/maintenance purposes.

## GLI3 LED Status Combinations

The GLI3 module has indicators, controls and connectors as described below and shown in Figure 6-2.

The indicators and controls consist of:

- Four LEDs
- One pushbutton

### ACTIVE LED

Solid GREEN - GLI3 is active. This means that the GLI3 has shelf control and is providing control of the digital interfaces.

Off - GLI3 is not active (i.e., Standby). The mate GLI3 should be active.

### MASTER LED

- Solid GREEN - GLI3 is Master (sometimes referred to as MGLI3).
- Off - GLI3 is non-master (i.e., Slave).

### ALARM LED

- Solid RED - GLI3 is in a fault condition or in reset.
- While in reset transition, STATUS LED is OFF while GLI3 is performing ROM boot (about 12 seconds for normal boot).
- While in reset transition, STATUS LED is ON while GLI3 is performing RAM boot (about 4 seconds for normal boot).
- Off - No Alarm.

### STATUS LED

- Flashing GREEN- GLI3 is in service (INS), in a stable operating condition.
- On - GLI3 is in OOS RAM state operating downloaded code.
- Off - GLI3 is in OOS ROM state operating boot code.

### SPANS LED

- Solid GREEN - Span line is connected and operating.
- Solid RED - Span line is disconnected or a fault condition exists.

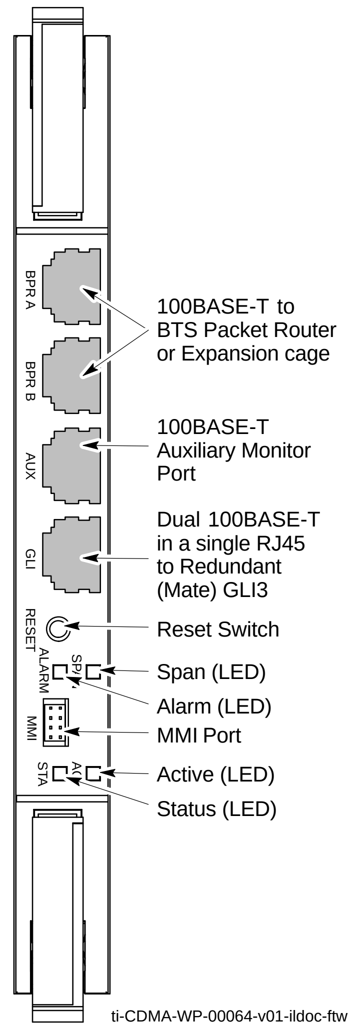
## GLI3 Pushbuttons and Connectors

**RESET Pushbutton** - Depressing the RESET pushbutton causes a partial reset of the CPU and a reset of all board devices. GLI3 will be placed in the OOS_ROM state

**MMI Connector** - The RS-232MMI port connector is intended to be used primarily in the development or factory environment but may be used in the field for debug/maintenance purposes.

**Figure 6-2:** GLI3 Front Panel Operating Indicators

| LED | OPERATING STATUS |
|---|---|
| BPR A | Connects to either a BPR or expansion cage and is wired as an ethernet hub. |
| BPR B | Connects to either a BPR or expansion cage and is wired as an ethernet hub. |
| AUX | Wired as an ethernet hub for direct connection to a personal computer with a standard ethernet cable. It allows connection of ethernet "sniffer" when the ethernet switch is properly configured for port monitoring. |
| GLI | Supports the cross-coupled ethernet circuits to the mate GLI using a standard ethernet straight cable. |
| RESET | Pressing and releasing the switch resets all functions on the GLI3. |
| ALARM | OFF - operating normally<br>ON - briefly during power-up when the Alarm LED turns OFF<br>SLOW GREEN - when the GLI3 is INS (in-service) |
| Span | OFF - card is powered down, in initialization, or in standby<br>GREEN - operating normally<br>YELLOW - one or more of the equipped initialized spans is receiving a remote alarm indication signal from the far end<br>RED - one or more of the equipped initialized spans is in an alarm state |
| MMI | An RS-232, serial, asynchronous communications link for use as an MMI port. This port supports 300 baud, up to a maximum of 115,200 baud communications. |
| STATUS | OFF - operating normally<br>ON - briefly during power-up when the Alarm LED turns OFF<br>SLOW GREEN - when the GLI3 is INS (in-service) |
| ACTIVE | Shows the operating status of the redundant cards. The redundant card toggles automatically if the active card is removed or fails<br>ON - active card operating normally<br>OFF - standby card operating normally |

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# BBX LED Status Combinations

### PWR/ALM LED

The BBX module has its own alarm (fault) detection circuitry that controls the state of the PWR/ALM LED.

The following list describes the states of the bi-color LED:

- Solid GREEN - INS_ACT no alarm
- Solid RED Red - initializing or power-up alarm
- Slowly Flashing GREEN - OOS_ROM no alarm
- Long RED/Short GREEN - OOS_ROM alarm
- Rapidly Flashing GREEN - OOS_RAM no alarm
- Short RED/Short GREEN - OOS_RAM alarm
- Long GREEN/Short RED - INS_ACT alarm

# MCC LED Status Combinations

The MCC module has LED indicators and connectors as described below. See Figure 6-3. Note that the figure does not show the connectors as they are concealed by the removable lens.

The LED indicators and their states are as follows:

### PWR/ALM LED

- RED - fault on module

### ACTIVE LED

- Off - module is inactive, off-line, or not processing traffic.
- Slowly Flashing GREEN - OOS_ROM no alarm.
- Rapidly Flashing Green - OOS_RAM no alarm.
- Solid GREEN - module is INS_ACT, on-line, processing traffic.

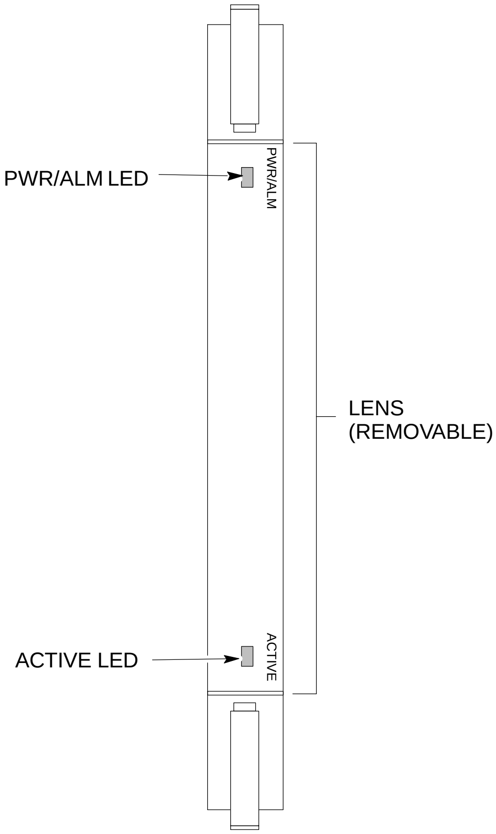
### PWR/ALM and ACTIVE LEDs

- Solid RED - module is powered but is in reset or the BCP is inactive.

### MMI Connectors

- The RS-232 MMI port connector (four-pin) is intended to be used primarily in the development or factory environment but may be used in the field for debugging purposes.
- The RJ-11 ethernet port connector (eight-pin) is intended to be used primarily in the development environment but may be used in the field for high data rate debugging purposes.

**Figure 6-3:** MCC24/8E Front Panel LEDs and LED Indicators




| LED | COLOR | OPERATING STATUS |
|---|---|---|
| PWR/ALM | RED | OFF - operating normally<br>ON - briefly during power-up and during failure conditions<br>*An alarm is generated in the event of a failure* |
| ACTIVE | GREEN | RAPIDLY BLINKING - Card is code-loaded but not enabled<br>SLOW BLINKING - Card is not code-loaded<br>ON - card is code-loaded and enabled (INS_ACTIVE) |
| | RED | ON - fault condition<br>SLOW FLASHING (alternating with green) - CHI bus inactive on power-up |

FW00224

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## LPA Shelf LED Status Combinations

### LPA Module LED

Each LPA module contains a bi-color LED just above the MMI connector on the ETIB module. Interpret this LED as follows:

- GREEN — LPA module is active and is reporting no alarms (Normal condition).
- Flashing GREEN/RED — LPA module is active but is reporting an low input power condition. If no BBX is keyed, this is normal and does not constitute a failure.
- Flashing RED — LPA is in alarm.

## Span Problems (No Control Link)

Follow the procedure in Table 6-29 when troubleshooting a control link failure.

**Table 6-29:** Troubleshooting Control Link Failure

| ✓ | Step | Action |
|---|---|---|
| | 1 | Verify the span settings using the `span view` command on the active master GLI3 MMI port. If these are set correctly, verify the edlc parameters using the `show` command. Any alarms conditions indicate that the span is not operating correctly.<br>- Try looping back the span line from the DSX panel back to the mobility manager (MM) and verify that the looped signal is good.<br>- Listen for control tone on appropriate timeslot from base site and MM. |

## Notes

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MOTOROLA

*Appendix A*

# System Data

# Site Operation Verification

## Verification of Test Equipment Used

**Table A-1:** Verification of Test Equipment Used

| Manufacturer | Model | Serial Number |
|---|---|---|
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Comments:____________________________________________________________

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## Site Checklist

**Table A-2:** Site Checklist

| OK | Parameter | Specification | Comments |
|---|---|---|---|
| ❑ | Deliveries | Per established procedures | |
| ❑ | Floor Plan | Verified | |
| | Inter Frame Cables: | | |
| ❑ | Ethernet | Per procedure | |
| ❑ | Frame Ground | Per procedure | |
| ❑ | Power | Per procedure | |
| | Factory Data: | | |
| ❑ | BBX | Per procedure | |
| ❑ | Test Panel | Per procedure | |
| ❑ | RFDS | Per procedure | |
| ❑ | Site Temperature | | |
| ❑ | Dress Covers/Brackets | | |

# Preliminary Operations

| **Table A-3:** Preliminary Operations | | | |
|---|---|---|---|
| **OK** | **Parameter** | **Specification** | **Comments** |
| ❑ | Shelf ID Dip Switches | Per site equipage | |
| ❑ | Ethernet LAN verification | Verified per procedure | |

Comments:________________________________________________________

# Pre-Power and Initial Power Tests

**Table A3a:** Pre-power Checklist

| OK | Parameter | Specification | Comments |
|---|---|---|---|
| ❑ | Pre-power-up tests | Verify power supply output voltage at the top of each BTS frame is within specifications | |
| | Internal Cables: | | |
| ❑ | ISB (all cages) | verified | |
| ❑ | CSM (all cages) | verified | |
| ❑ | Power (all cages) | verified | |
| | Ethernet Connectors | | |
| ❑ | LAN A ohms | verified | |
| ❑ | LAN B ohms | verified | |
| ❑ | LAN A shield | isolated | |
| ❑ | LAN B shield | isolated | |
| ❑ | Ethernet Boots | installed | |
| ❑ | Air Impedance Cage (single cage) | installed | |
| ❑ | Initial power-up tests | Verify power supply output voltage at the top of each BTS frame is within specifications: | |

Comments:____________________________________________________________

# General Optimization Checklist

**Table A3b:** Pre-power Checklist

| OK | Parameter | Specification | Comments |
|---|---|---|---|
| ❑ | LEDs | illuminated | |
| ❑ | Frame fans | operational | |
| | LMF to BTS Connection | | |
| ❑ | Preparing the LMF | per procedure | |
| ❑ | Log into the LMF PC | per procedure | |
| ❑ | Create site specific BTS directory | per procedure | |
| ❑ | Download device loads | per procedure | |
| ❑ | Ping LAN A | per procedure | |
| ❑ | Ping LAN B | per procedure | |
| ❑ | Download/Enable MGLI3s | per procedure | |
| ❑ | Download/Enable GLI3s | per procedure | |
| ❑ | Set Site Span Configuration | per procedure | |
| ❑ | Download CSMs | per procedure | |
| ❑ | Enable CSMs | per procedure | |
| ❑ | Enable CSMs | per procedure | |
| ❑ | Download/Enable MCCs* | per procedure | |
| ❑ | Download BBXs* | per procedure | |
| ❑ | Download TSU (in RFDS) | per procedure | |
| | Program TSU NAM | | |
| ❑ | Test Set Calibration | per procedure | |

*MCCs may be MCC8Es, MCC24s or MCC-1Xs. BBXs may be BBXs or BBX-1Xs

Comments:_______________________________________________________

# GPS Receiver Operation

**Table A-4:** GPS Receiver Operation

| OK | Parameter | Specification | Comments |
|---|---|---|---|
| ❑ | GPS Receiver Control Task State:<br>**tracking satellites** | Verify parameter | |
| ❑ | Initial Position Accuracy: | Verify Estimated or Surveyed | |
| ❑ | Current Position:<br>**lat**<br>**lon**<br>**height** | RECORD in msec and cm also convert to deg min sec | |
| ❑ | Current Position: satellites tracked<br>Estimated:<br>**(>4) satellites tracked,(>4) satellites visible**<br>Surveyed:<br>**(≥1) satellite tracked,(>4) satellites visible** | Verify parameter as appropriate: | |
| ❑ | GPS Receiver Status:Current Dilution of Precision<br>(PDOP or HDOP): (<**30)** | Verify parameter | |
| ❑ | Current reference source:<br>**Number: 0; Status: Good; Valid: Yes** | Verify parameter | |

Comments:_______________________________________________________

# LFR Receiver Operation

**Table A-5:** LFR Receiver Operation

| OK | Parameter | Specification | Comments |
|---|---|---|---|
| ❑ | Station call letters M X Y Z assignment. | as specified in site documentation | |
| ❑ | SN ratio is > 8 dB | | |
| ❑ | LFR Task State: 1fr<br>**locked to station xxxx** | Verify parameter | |
| ❑ | Current reference source:<br>**Number: 1; Status: Good; Valid: Yes** | Verify parameter | |

Comments:________________________________________________________

## LPA IM Reduction

**Table A-6:** LPA IM Reduction

| OK | Parameter | | | | | Specification | Comments |
|---|---|---|---|---|---|---|---|
| | LPA # | CARRIER | | | | | |
| | | 4:1 & 2:1 3-Sector | 2:1 6-Sector | Dual BP 3-Sector | Dual BP 6-Sector | | |
| ❑ | 1A | C1 | C1 | C1 | C1 | No Alarms | |
| ❑ | 1B | C1 | C1 | C1 | C1 | No Alarms | |
| ❑ | 1C | C1 | C1 | C1 | C1 | No Alarms | |
| ❑ | 1D | C1 | C1 | C1 | C1 | No Alarms | |
| ❑ | 2A | C2 | C2 | C2 | | No Alarms | |
| ❑ | 2B | C2 | C2 | C2 | | No Alarms | |
| ❑ | 2C | C2 | C2 | C2 | | No Alarms | |
| ❑ | 2D | C2 | C2 | C2 | | No Alarms | |
| ❑ | 3A | C3 | C1 | | C1 | No Alarms | |
| ❑ | 3B | C3 | C1 | | C1 | No Alarms | |
| ❑ | 3C | C3 | C1 | | C1 | No Alarms | |
| ❑ | 3D | C3 | C1 | | C1 | No Alarms | |
| ❑ | 4A | C4 | C2 | | | No Alarms | |
| ❑ | 4B | C4 | C2 | | | No Alarms | |
| ❑ | 4C | C4 | C2 | | | No Alarms | |
| ❑ | 4D | C4 | C2 | | | No Alarms | |

Comments:________________________________________________________

# TX Bay Level Offset / Power Output Verification for 3-Sector Configurations

**1-Carrier**
**2-Carrier Non-adjacent Channels**
**4-Carrier Non-adjacent Channels**

**Table A-7:** TX BLO Calibration (3-Sector: 1-Carrier, 2-Carrier and 4-Carrier Non-adjacent Channels)

| OK | Parameter | Specification | Comments |
|---|---|---|---|
| ❑ | Calibrate carrier 1 | TX Bay Level Offset = 37 dB (±4 dB) prior to calibration | BBX-1, ANT-1 = ____dB<br>BBX-r, ANT-1 = ____dB |
| ❑ | | | BBX-2, ANT-2 = ____dB<br>BBX-r, ANT-2 = ____dB |
| ❑ | | | BBX-3, ANT-3 = ____dB<br>BBX-r, ANT-3 = ____dB |
| ❑ | Calibrate carrier 2 | TX Bay Level Offset = 37 dB (±4 dB) prior to calibration | BBX-7, ANT-1 = ____dB<br>BBX-r, ANT-1 = ____dB |
| ❑ | | | BBX-8, ANT-2 = ____dB<br>BBX-r, ANT-2 = ____dB |
| ❑ | | | BBX-9, ANT-3 = ____dB<br>BBX-r, ANT-3 = ____dB |
| ❑ | Calibrate carrier 3 | TX Bay Level Offset = 37 dB (±4 dB) prior to calibration | BBX-4, ANT-1 = ____dB<br>BBX-r, ANT-1 = ____dB |
| ❑ | | | BBX-5, ANT-2 = ____dB<br>BBX-r, ANT-2 = ____dB |
| ❑ | | | BBX-6, ANT-3 = ____dB<br>BBX-r, ANT-3 = ____dB |
| ❑ | Calibrate carrier 4 | TX Bay Level Offset = 37 dB (±4 dB) prior to calibration | BBX-10, ANT-1 = ___dB<br>BBX-r, ANT-1 = ____dB |
| ❑ | | | BBX-11, ANT-2 = ___dB<br>BBX-r, ANT-2 = ____dB |
| ❑ | | | BBX-12, ANT-3 = ___dB<br>BBX-r, ANT-3 = ____dB |
| ❑ | Calibration Audit carrier 1 | 0 dB (±0.5 dB) for gain set resolution post calibration | BBX-1, ANT-1 = ____dB<br>BBX-r, ANT-1 = ____dB |
| ❑ | | | BBX-2, ANT-2 = ____dB<br>BBX-r, ANT-2 = ____dB |
| ❑ | | | BBX-3, ANT-3 = ____dB<br>BBX-r, ANT-3 = ____dB |

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| Table A-7: TX BLO Calibration (3-Sector: 1-Carrier, 2-Carrier and 4-Carrier Non-adjacent Channels) | | | |
|---|---|---|---|
| **OK** | **Parameter** | **Specification** | **Comments** |
| ❑ | Calibration Audit carrier 2 | 0 dB (±0.5 dB) for gain set resolution post calibration | BBX-7, ANT-1 = ____dB<br>BBX-r, ANT-1 = ____dB |
| ❑ | | | BBX-8, ANT-2 = ____dB<br>BBX-r, ANT-2 = ____dB |
| ❑ | | | BBX-9, ANT-3 = ____dB<br>BBX-r, ANT-3 = ____dB |
| ❑ | Calibration Audit carrier 3 | 0 dB (±0.5 dB) for gain set resolution post calibration | BBX-4, ANT-1 = ____dB<br>BBX-r, ANT-1 = ____dB |
| ❑ | | | BBX-5, ANT-2 = ____dB<br>BBX-r, ANT-2 = ____dB |
| ❑ | | | BBX-6, ANT-3 = ____dB<br>BBX-r, ANT-3 = ____dB |
| ❑ | Calibration Audit carrier 4 | 0 dB (±0.5 dB) for gain set resolution post calibration | BBX-10, ANT-1 = ___dB<br>BBX-r, ANT-1 = ____dB |
| ❑ | | | BBX-1 1, ANT-2 = ___dB<br>BBX-r, ANT-2 = ____dB |
| ❑ | | | BBX-12, ANT-3 = ___dB<br>BBX-r, ANT-3 = ____dB |

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## 2-Carrier Adjacent Channel

| Table A-8: TX Bay Level Offset Calibration (3-Sector: 2-Carrier Adjacent Channels) | | | |
|---|---|---|---|
| **OK** | **Parameter** | **Specification** | **Comments** |
| ❑ | Calibrate carrier 1 | TX Bay Level Offset = 42 dB (typical), 38 dB (minimum) prior to calibration | BBX-1, ANT-1 = ____dB<br>BBX-r, ANT-1 = ____dB |
| ❑ | | | BBX-2, ANT-2 = ____dB<br>BBX-r, ANT-2 = ____dB |
| ❑ | | | BBX-3, ANT-3 = ____dB<br>BBX-r, ANT-3 = ____dB |

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| Table A-8: TX Bay Level Offset Calibration (3-Sector: 2-Carrier Adjacent Channels) | | | |
|---|---|---|---|
| OK | Parameter | Specification | Comments |
| ❑ | Calibrate carrier 2 | TX Bay Level Offset = 42 dB (typical), 38 dB (minimum) prior to calibration | BBX-7, ANT-4 = ____dB<br>BBX-r, ANT-4 = ____dB |
| ❑ | | | BBX-8, ANT-5 = ____dB<br>BBX-r, ANT-5 = ____dB |
| ❑ | | | BBX-9, ANT-6 = ____dB<br>BBX-r, ANT-6 = ____dB |
| ❑ | Calibration Audit carrier 1 | 0 dB (+0.5 dB) for gain set resolution post calibration | BBX-1, ANT-1 = ____dB<br>BBX-r, ANT-1 = ____dB |
| ❑ | | | BBX-2, ANT-2 = ____dB<br>BBX-r, ANT-2 = ____dB |
| ❑ | | | BBX-3, ANT-3 = ____dB<br>BBX-r, ANT-3 = ____dB |
| ❑ | Calibration Audit carrier 2 | 0 dB (+0.5 dB) for gain set resolution post calibration | BBX-7, ANT-4 = ____dB<br>BBX-r, ANT-4 = ____dB |
| ❑ | | | BBX-8, ANT-5 = ____dB<br>BBX-r, ANT-5 = ____dB |
| ❑ | | | BBX-9, ANT-6 = ____dB<br>BBX-r, ANT-6 = ____dB |

Comments:________________________________________________________

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## 3-Carrier Adjacent Channels
## 4-Carrier Adjacent Channels

| Table A-9: TX Bay Level Offset Calibration (3-Sector: 3 or 4-Carrier Adjacent Channels) | | | |
|---|---|---|---|
| OK | Parameter | Specification | Comments |
| ❑ | Calibrate carrier 1 | TX Bay Level Offset = 37 dB before calibration | BBX-1, ANT-1 = ____dB<br>BBX-r, ANT-1 = ____dB |
| ❑ | | | BBX-2, ANT-2 = ____dB<br>BBX-r, ANT-2 = ____dB |
| ❑ | | | BBX-3, ANT-3 = ____dB<br>BBX-r, ANT-3 = ____dB |

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| Table A-9: TX Bay Level Offset Calibration (3-Sector: 3 or 4-Carrier Adjacent Channels) | | | |
|---|---|---|---|
| **OK** | **Parameter** | **Specification** | **Comments** |
| ❑ | Calibrate carrier 2 | TX Bay Level Offset =37 dB before calibration | BBX-7, ANT-1 = ____dB<br>BBX-r, ANT-1 = ____dB |
| ❑ | | | BBX-8, ANT-2 = ____dB<br>BBX-r, ANT-2 = ____dB |
| ❑ | | | BBX-9, ANT-3 = ____dB<br>BBX-r, ANT-3 = ____dB |
| ❑ | Calibrate carrier 3 | TX Bay Level Offset = 37 dB before calibration | BBX-4, ANT-4 = ____dB<br>BBX-r, ANT-4 = ____dB |
| ❑ | | | BBX-5, ANT-5 = ____dB<br>BBX-r, ANT-5 = ____dB |
| ❑ | | | BBX-6, ANT-6 = ____dB<br>BBX-r, ANT-6 = ____dB |
| ❑ | Calibrate carrier 4 | TX Bay Level Offset = 37 dB before calibration | BBX-10, ANT-4 = ___dB<br>BBX-3, ANT-4 = ____dB |
| ❑ | | | BBX-1 1, ANT-5 = ___dB<br>BBX-r, ANT-5 = ____dB |
| ❑ | | | BBX-12, ANT-6 = ___dB<br>BBX-r, ANT-6 = ____dB |
| ❑ | Calibration Audit carrier 1 | 0 dB (±0.5 dB) for gain set resolution post calibration | BBX-1, ANT-1 = ____dB<br>BBX-r, ANT-1 = ____dB |
| ❑ | | | BBX-2, ANT-2 = ____dB<br>BBX-r, ANT-2 = ____dB |
| ❑ | | | BBX-3, ANT-3 = ____dB<br>BBX-r, ANT-3 = ____dB |
| ❑ | Calibration Audit carrier 2 | 0 dB (±0.5 dB) for gain set resolution post calibration | BBX-7, ANT-1 = ____dB<br>BBX-r, ANT-1 = ____dB |
| ❑ | | | BBX-8, ANT-2 = ____dB<br>BBX-r, ANT-2 = ____dB |
| ❑ | | | BBX-9, ANT-3 = ____dB<br>BBX-r, ANT-3 = ____dB |

. . . continued on next page

| Table A-9: TX Bay Level Offset Calibration (3-Sector: 3 or 4-Carrier Adjacent Channels) | | | |
|---|---|---|---|
| **OK** | **Parameter** | **Specification** | **Comments** |
| ❑ | Calibration Audit carrier 3 | 0 dB (±0.5 dB) for gain set resolution post calibration | BBX-4, ANT-4 = ____dB<br>BBX-r, ANT-4 = ____dB |
| ❑ | | | BBX-5, ANT-5 = ____dB<br>BBX-r, ANT-5 = ____dB |
| ❑ | | | BBX-6, ANT-6 = ____dB<br>BBX-r, ANT-6 = ____dB |
| ❑ | Calibration Audit carrier 4 | 0 dB (±0.5 dB) for gain set resolution post calibration | BBX-10, ANT-4 = ___dB<br>BBX-r, ANT-4 = ____dB |
| ❑ | | | BBX-1 1, ANT-5 = ___dB<br>BBX-r, ANT-5 = ____dB |
| ❑ | | | BBX-12, ANT-6 = ___dB<br>BBX-r, ANT-6 = ____dB |

Comments:________________________________________________________

________________________________________________________________

# TX Bay Level Offset / Power Output Verification for 6-Sector Configurations

## 1-Carrier
## 2-Carrier Non-adjacent Channels

**Table A-10:** TX BLO Calibration (6-Sector: 1-Carrier, 2-Carrier Non-adjacent Channels)

| OK | Parameter | Specification | Comments |
|---|---|---|---|
| ❑ | Calibrate carrier 1 | TX Bay Level Offset = 42 dB (typical), 38 dB (minimum) prior to calibration | BBX-1, ANT-1 = ____dB<br>BBX-r, ANT-1 = ____dB |
| ❑ | | | BBX-2, ANT-2 = ____dB<br>BBX-r, ANT-2 = ____dB |
| ❑ | | | BBX-3, ANT-3 = ____dB<br>BBX-r, ANT-3 = ____dB |
| ❑ | | | BBX-4, ANT-4 = ____dB<br>BBX-r, ANT-4 = ____dB |
| ❑ | | | BBX-5, ANT-5 = ____dB<br>BBX-r, ANT-5 = ____dB |
| ❑ | | | BBX-6, ANT-6 = ____dB<br>BBX-r, ANT-6 = ____dB |
| ❑ | Calibrate carrier 2 | TX Bay Level Offset = 42 dB (typical), 38 dB (minimum) prior to calibration | BBX-7, ANT-1 = ____dB<br>BBX-r, ANT-1 = ____dB |
| ❑ | | | BBX-8, ANT-2 = ____dB<br>BBX-r, ANT-2 = ____dB |
| ❑ | | | BBX-9, ANT-3 = ____dB<br>BBX-r, ANT-3 = ____dB |
| ❑ | | | BBX-10, ANT-4 = ___dB<br>BBX-3, ANT-4 = ____dB |
| ❑ | | | BBX-11, ANT-5 = ___dB<br>BBX-r, ANT-5 = ____dB |
| ❑ | | | BBX-12, ANT-6 = ___dB<br>BBX-r, ANT-5 = ____dB |

. . . continued on next page

| Table A-10: TX BLO Calibration (6-Sector: 1-Carrier, 2-Carrier Non-adjacent Channels) | | | |
|---|---|---|---|
| **OK** | **Parameter** | **Specification** | **Comments** |
| ❑ | Calibration Audit carrier 1 | 0 dB (±0.5 dB) for gain set resolution post calibration | BBX-1, ANT-1 = ____dB<br>BBX-r, ANT-1 = ____dB |
| ❑ | | | BBX-2, ANT-2 = ____dB<br>BBX-r, ANT-2 = ____dB |
| ❑ | | | BBX-3, ANT-3 = ____dB<br>BBX-r, ANT-3 = ____dB |
| ❑ | | | BBX-4, ANT-4 = ____dB<br>BBX-r, ANT-4 = ____dB |
| ❑ | | | BBX-5, ANT-5 = ____dB<br>BBX-r, ANT-5 = ____dB |
| ❑ | | | BBX-6, ANT-6 = ____dB<br>BBX-r, ANT-6 = ____dB |
| ❑ | Calibration Audit carrier 2 | 0 dB (±0.5 dB) for gain set resolution post calibration | BBX-7, ANT-1 = ____dB<br>BBX-r, ANT-1 = ____dB |
| ❑ | | | BBX-8, ANT-2 = ____dB<br>BBX-r, ANT-2 = ____dB |
| ❑ | | | BBX-9, ANT-3 = ____dB<br>BBX-r, ANT-3 = ____dB |
| ❑ | | | BBX-10, ANT-4 = ___dB<br>BBX-r, ANT-4 = ____dB |
| ❑ | | | BBX-11, ANT-5 = ___dB<br>BBX-r, ANT-5 = ____dB |
| ❑ | | | BBX-12, ANT-6 = ___dB<br>BBX-r, ANT-6 = ____dB |

Comments:____________________________________________________________

______________________________________________________________________

# TX Antenna VSWR

| Table A-11: TX Antenna VSWR | | | |
|---|---|---|---|
| OK | Parameter | Specification | Data |
| ❑ | VSWR - Antenna 1 | < (1.5 : 1) | |
| ❑ | VSWR - Antenna 2 | < (1.5 : 1) | |
| ❑ | VSWR - Antenna 3 | < (1.5 : 1) | |
| ❑ | VSWR - Antenna 4 | < (1.5 : 1) | |
| ❑ | VSWR - Antenna 5 | < (1.5 : 1) | |
| ❑ | VSWR - Antenna 6 | < (1.5 : 1) | |

Comments:________________________________________________________

__________________________________________________________________

# RX Antenna VSWR

| Table A-12: RX Antenna VSWR | | | |
|---|---|---|---|
| OK | Parameter | Specification | Data |
| ❑ | VSWR - Antenna 1 | < (1.5 : 1) | |
| ❑ | VSWR - Antenna 2 | < (1.5 : 1) | |
| ❑ | VSWR - Antenna 3 | < (1.5 : 1) | |
| ❑ | VSWR - Antenna 4 | < (1.5 : 1) | |
| ❑ | VSWR - Antenna 5 | < (1.5 : 1) | |
| ❑ | VSWR - Antenna 6 | < (1.5 : 1) | |

Comments:________________________________________________________

A

# Alarm Verification

**Table A-13:** CDI Alarm Input Verification

| OK | Parameter | Specification | Data |
|---|---|---|---|
| ❑ | Verify CDI alarm input operation per Table 3-1. | BTS Relay #XX - Contact Alarm Sets/Clears | |

Comments:_________________________________________________________

# C-CCP Shelf

| | |
|---|---|
| **Site I/O A & B** | ____________ |
| **C-CCP Shelf** | ____________ |
| CSM-1 | ____________ |
| CSM-2 | ____________ |
| HSO | ____________ |
| CCD-1 | ____________ |
| CCD-2 | ____________ |
| AMR-1 | ____________ |
| AMR-2 | ____________ |
| MPC-1 | ____________ |
| MPC-2 | ____________ |
| Fans 1-3 | ____________ |
| GLI3-1 | ____________ |
| GLI3-2 | ____________ |
| BBX-1 | ____________ |
| BBX-2 | ____________ |
| BBX-3 | ____________ |
| BBX-4 | ____________ |
| BBX-5 | ____________ |
| BBX-6 | ____________ |
| BBX-7 | ____________ |
| BBX-8 | ____________ |
| BBX-9 | ____________ |
| BBX-10 | ____________ |
| BBX-11 | ____________ |
| BBX-12 | ____________ |
| BBX-r | ____________ |
| MCC-1 | ____________ |
| MCC-2 | ____________ |
| MCC-3 | ____________ |
| MCC-4 | ____________ |
| MCC-5 | ____________ |
| MCC-6 | ____________ |
| MCC-7 | ____________ |
| MCC-8 | ____________ |
| MCC-9 | ____________ |
| MCC-10 | ____________ |
| | |
| CIO | ____________ |
| SWITCH | ____________ |
| PS-1 | ____________ |
| PS-2 | ____________ |
| PS-3 | ____________ |

## LPAs

LPA 1A ________________________________
LPA 1B ________________________________
LPA 1C ________________________________
LPA 1D ________________________________
LPA 2A ________________________________
LPA 2B ________________________________
LPA 2C ________________________________
LPA 2D ________________________________
LPA 3A ________________________________
LPA 3B ________________________________
LPA 3C ________________________________
LPA 3D ________________________________
LPA 4A ________________________________
LPA 4B ________________________________
LPA 4C ________________________________
LPA 4D ________________________________

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B

*Appendix B*

# ATP Matrix Table

B

# Re-optimization

## Usage & Background

Periodic maintenance of a site may also mandate re-optimization of specific portions of the site. An outline of some basic guidelines is included in the following tables.

| NOTE | Re-optimization steps listed for any assembly detailed in the tables below must be performed *anytime* an RF cable associated with it is replaced. |
|---|---|

## Detailed Optimization/ATP Test Matrix

Table B-1 outlines in more detail the tests that would need to be performed if one of the BTS components were to fail and be replaced. It is also assumes that all modules are placed OOS-ROM via the LMF until full redundancy of all applicable modules is implemented.

The following guidelines should also be noted when using this table.

| NOTE | Not every procedure required to bring the site back in service is indicated in Table B-1. It is meant to be used as a guideline ONLY. The table assumes that the user is familiar enough with the BTS Optimization/ATP procedure to understand which test equipment set ups, calibrations, and BTS site preparation will be required before performing the Table # procedures referenced. |
|---|---|

Various passive BTS components (such as the DRDCs, filter; etc.) only require a TX calibration audit to be performed in lieu of a full path calibration. If the TX path calibration audit fails, the entire RF path calibration will need to be repeated. If the RF path calibration fails, further troubleshooting is warranted.

Whenever any C-CCP BACKPLANE is replaced, it is assumed that only power to the C-CCP shelf being replaced is turned off via the breaker supplying that shelf.

| NOTE | If any significant change in signal level results from any component being replaced in the RX or TX signal flow paths, it would be identified by re-running the RX and TX calibration audit command. |
|---|---|

When the CIO is replaced, the C-CCP shelf remains powered up. The BBX boards may need to be removed, then re-installed into their original slots, and re-downloaded (code and BLO data). RX and TX calibration audits should then be performed.

| Doc Tbl # | Description | DRDC or TRDC | RX Cables | TX Cables | MPC / EMPC | CIO | SCCP Shelf Assembly (Backplane) | BBX2/BBX-1X | MCC24E/MCC8E/MCC-1X | CSM/GPS | LFR | HSO/HSOX | 50-pair Punchblock w/RGPS | RGD/20-pair Punchblock w/RGD | CCD Card | GLI3 | ETIB or Associated Cables | LPAC Cable | LPA or LPA Trunking Module | LPA Bandpass Filter or Combiner | Swithch Card | RFDS cables | RFDS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Table 3-20/ Table 3-21/ | Download Code/Data | | | | | | • | • | • | • | | | | | | • | | | | | | | • |
| Table 3-23 | Enable CSMs | | | | | | • | | | • | | | • | • | | | 9 | | | | | | |
| Table 3-26 | GPS &HSO Initialization / Verification | | | | | | • | | | • | • | • | • | • | • | | 9 | | | | | | |
| Table 3-27 | LFR Initialization / Verification | | | | | | • | | | | • | | | | • | | | | | | | | |
| Table 3-41 | TX Path Calibration | 4 | | 4 | | 1 | 1 | 4 | | | | | | | | * | | 3 | 3 | 4 | 7 | | |
| Table 3-42 | Download Offsets to BBX | 4 | | | | | | 1 | 4 | | | | | | | * | | | | | | | |
| Table 3-43 | TX Path Audit | 4 | | 4 | | 1 | 1 | 4 | | | | | | | | * | | | 3 | 4 | 7 | | |
| Table 3-52 | RFDS Path Calibration and Offset Data Download | 6 | 5 | 4 | 5 | 1 | 1 | 6 | | | | | | | | * | | | 3 | 4 | | 6 | 6 |
| Table 4-1 | Spectral Purity TX Mask | 4 | | | | | 1 | 4 | | | | | | | | * | | | * | * | * | | |
| Table 4-1 | Waveform Quality (rho) | 4 | | | | * | 1 | 4 | | * | | | | | * | * | 1 | | * | * | | | |
| Table 4-1 | Pilot Time Offset | 4 | | | | * | 1 | 4 | | * | | | | | * | * | | | * | * | | | |
| Table 4-1 | Code Domain Power / Noise Floor | 4 | | | | | | 1 | 4 | 8 | 8 | 8 | | | 8 | * | | | * | * | | | |
| Table 4-1 | FER Test | 5 | 5 | | 5 | 2 | 2 | 5 | 8 | 8 | 8 | | | | 8 | * | | | | | 7 | | |
| Table 3-54/ Table 3-63 | Alarm Tests | | | | | | | | | | | | | | | | • | | | | | | |

**Table B-1:** SC 4812ET BTS Optimization and ATP Test Matrix

. . . continued on next page

**Table B-1:** SC 4812ET BTS Optimization and ATP Test Matrix

| Doc Tbl # | Description | DRDC or TRDC | RX Cables | TX Cables | MPC / EMPC | CIO | SCCP Shelf Assembly (Backplane) | BBX2/BBX-1X | MCC24E/MCC8E/MCC-1X | CSM/GPS | LFR | HSO/HSOX | 50-pair Punchblock w/RGPS | RGD/20-pair Punchblock w/RGD | CCD Card | GLI3 | ETIB or Associated Cables | LPAC Cable | LPA or LPA Trunking Module | LPA Bandpass Filter or Combiner | Swithch Card | RFDS cables | RFDS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

**OPTIMIZATION AND TEST LEGEND:**

● Required

***** Perform if determined necessary for addtional fault isolation, repair assurance, or required for site certification.

****** Replace power supply modules one at a time so that power to the C-CCP shelf is not interrupted. If power to the shelf is lost, all cards in the shelf must be downloaded again.

1. Perform on all carrier and sector TX paths to the C-CCP cage.
2. Perform on all carrier and sector RX paths to the C-CCP cage.
3. Perform on all primary and redundant TX paths of the affected carrier.
4. Perform on the affected carrier and sector TX path(s) (BBXR replacement affects *all* carrier and sector TX paths)
5. Perform on the affected carrier and sector RX path(s) (BBXR replacement affects *all* carrier RX paths)
6. Perform on *all RF paths* of the affected carrier and sector (RFDS replacement affects all carriers)
7. Perform with *redundant* BBX for *at least* one sector on one carrier.
8. Verify performance by performing on one sector of one carrier only.
9. Perform only if RGD/RGPS, LFR antenna, or HSO or LFR expansion was installed
10. Verify performance by performing testing on one sector of *each* carrier.

C

# Appendix C

# BBX Gain

# BBX Gain Set Point

## Usage & Background

Table C-1 outlines the relationship between the *total* of all code domain channel element gain settings (digital root sum of the squares) and the BBX Gain Set Point between 33.0 dBm and 44.0 dBm. The resultant RF output (as measured at the top of the BTS in dBm) is shown in the table. The table assumes that the BBX Bay Level Offset (BLO) values have been calculated.

As an illustration, consider a BBX keyed up to produce a CDMA carrier with only the Pilot channel (no MCCs forward link enabled). Pilot gain is set to 262. In this case, the BBX Gain Set Point is shown to correlate exactly to the actual RF output anywhere in the 33 to 44 dBm output range. (This is the level used to calibrate the BTS).

**Table C-1:** BBX Gain Set Point vs. Actual BTS Output (in dBm)

| dBm→ Gain↓ | 44 | 43 | 42 | 41 | 40 | 39 | 38 | 37 | 36 | 35 | 34 | 33 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **541** | - | - | - | - | - | - | - | 43.3 | 42.3 | 41.3 | 40.3 | 39.3 |
| **533** | - | - | - | - | - | - | - | 43.2 | 42.2 | 41.2 | 40.2 | 39.2 |
| **525** | - | - | - | - | - | - | - | 43 | 42 | 41 | 40 | 39 |
| **517** | - | - | - | - | - | - | - | 42.9 | 41.9 | 40.9 | 39.9 | 38.9 |
| **509** | - | - | - | - | - | - | - | 42.8 | 41.8 | 40.8 | 39.8 | 38.8 |
| **501** | - | - | - | - | - | - | - | 42.6 | 41.6 | 40.6 | 39.6 | 38.6 |
| **493** | - | - | - | - | - | - | 43.5 | 42.5 | 41.5 | 40.5 | 39.5 | 38.5 |
| **485** | - | - | - | - | - | - | 43.4 | 42.4 | 41.4 | 40.4 | 39.4 | 38.4 |
| **477** | - | - | - | - | - | - | 43.2 | 42.2 | 41.2 | 40.2 | 39.2 | 38.2 |
| **469** | - | - | - | - | - | - | 43.1 | 42.1 | 41.1 | 40.1 | 39.1 | 38.1 |
| **461** | - | - | - | - | - | - | 42.9 | 41.9 | 40.9 | 39.9 | 38.9 | 37.9 |
| **453** | - | - | - | - | - | - | 42.8 | 41.8 | 40.8 | 39.8 | 38.8 | 37.8 |
| **445** | - | - | - | - | - | 43.6 | 42.6 | 41.6 | 40.6 | 39.6 | 38.6 | 37.6 |
| **437** | - | - | - | - | - | 43.4 | 42.4 | 41.4 | 40.4 | 39.4 | 38.4 | 37.4 |
| **429** | - | - | - | - | - | 43.3 | 42.3 | 41.3 | 40.3 | 39.3 | 38.3 | 37.3 |
| **421** | - | - | - | - | - | 43.1 | 42.1 | 41.1 | 40.1 | 39.1 | 38.1 | 37.1 |
| **413** | - | - | - | - | - | 43 | 42 | 41 | 40 | 39 | 38 | 37 |
| **405** | - | - | - | - | - | 42.8 | 41.8 | 40.8 | 39.8 | 38.8 | 37.8 | 36.8 |
| **397** | - | - | - | - | 43.6 | 42.6 | 41.6 | 40.6 | 39.6 | 38.6 | 37.6 | 36.6 |
| **389** | - | - | - | - | 43.4 | 42.4 | 41.4 | 40.4 | 39.4 | 38.4 | 37.4 | 36.4 |

. . . continued on next page

**Table C-1:** BBX Gain Set Point vs. Actual BTS Output (in dBm)

| dBm▶ Gain▼ | 44 | 43 | 42 | 41 | 40 | 39 | 38 | 37 | 36 | 35 | 34 | 33 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **381** | - | - | - | - | 43.3 | 42.3 | 41.3 | 40.3 | 39.3 | 38.3 | 37.3 | 36.3 |
| **374** | - | - | - | - | 43.1 | 42.1 | 41.1 | 40.1 | 39.1 | 38.1 | 37.1 | 36.1 |
| **366** | - | - | - | - | 42.9 | 41.9 | 40.9 | 39.9 | 38.9 | 37.9 | 36.9 | 35.9 |
| **358** | - | - | - | - | 42.7 | 41.7 | 40.7 | 39.7 | 38.7 | 37.7 | 36.7 | 35.7 |
| **350** | - | - | - | 43.5 | 42.5 | 41.5 | 40.5 | 39.5 | 38.5 | 37.5 | 36.5 | 35.5 |
| **342** | - | - | - | 43.3 | 42.3 | 41.3 | 40.3 | 39.3 | 38.3 | 37.3 | 36.3 | 35.3 |
| **334** | - | - | - | 43.1 | 42.1 | 41.1 | 40.1 | 39.1 | 38.1 | 37.1 | 36.1 | 35.1 |
| **326** | - | - | - | 42.9 | 41.9 | 40.9 | 39.9 | 38.9 | 37.9 | 36.9 | 35.9 | 34.9 |
| **318** | - | - | - | 42.7 | 41.7 | 40.7 | 39.7 | 38.7 | 37.7 | 36.7 | 35.7 | 34.7 |
| **310** | - | - | 43.5 | 42.5 | 41.5 | 40.5 | 39.5 | 38.5 | 37.5 | 36.5 | 35.5 | 34.5 |
| **302** | - | - | 43.2 | 42.2 | 41.2 | 40.2 | 39.2 | 38.2 | 37.2 | 36.2 | 35.2 | 34.2 |
| **294** | - | - | 43 | 42 | 41 | 40 | 39 | 38 | 37 | 36 | 35 | 34 |
| **286** | - | - | 42.8 | 41.8 | 40.8 | 39.8 | 38.8 | 37.8 | 36.8 | 35.8 | 34.8 | 33.8 |
| **278** | - | 43.5 | 42.5 | 41.5 | 40.5 | 39.5 | 38.5 | 37.5 | 36.5 | 35.5 | 34.5 | 33.5 |
| **270** | - | 43.3 | 42.3 | 41.3 | 40.3 | 39.3 | 38.3 | 37.3 | 36.3 | 35.3 | 34.3 | 33.3 |
| **262** | - | 43 | 42 | 41 | 40 | 39 | 38 | 37 | 36 | 35 | 34 | 33 |
| **254** | - | 42.7 | 41.7 | 40.7 | 39.7 | 38.7 | 37.7 | 36.7 | 35.7 | 34.7 | 33.7 | 32.7 |
| **246** | 43.4 | 42.4 | 41.4 | 40.4 | 39.4 | 38.4 | 37.4 | 36.4 | 35.4 | 34.4 | 33.4 | 32.4 |
| **238** | 43.2 | 42.2 | 41.2 | 40.2 | 39.2 | 38.2 | 37.2 | 36.2 | 35.2 | 34.2 | 33.2 | 32.2 |
| **230** | 42.9 | 41.9 | 40.9 | 39.9 | 38.9 | 37.9 | 36.9 | 35.9 | 34.9 | 33.9 | 32.9 | 31.9 |
| **222** | 42.6 | 41.6 | 40.6 | 39.6 | 38.6 | 37.6 | 36.6 | 35.6 | 34.6 | 33.6 | 32.6 | 31.6 |
| **214** | 42.2 | 41.2 | 40.2 | 39.2 | 38.2 | 37.2 | 36.2 | 35.2 | 34.2 | 33.2 | 32.2 | 31.2 |

## Notes

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*Appendix D*

D

# CDMA Operating Frequency Programming

# Channel Frequencies

## Introduction

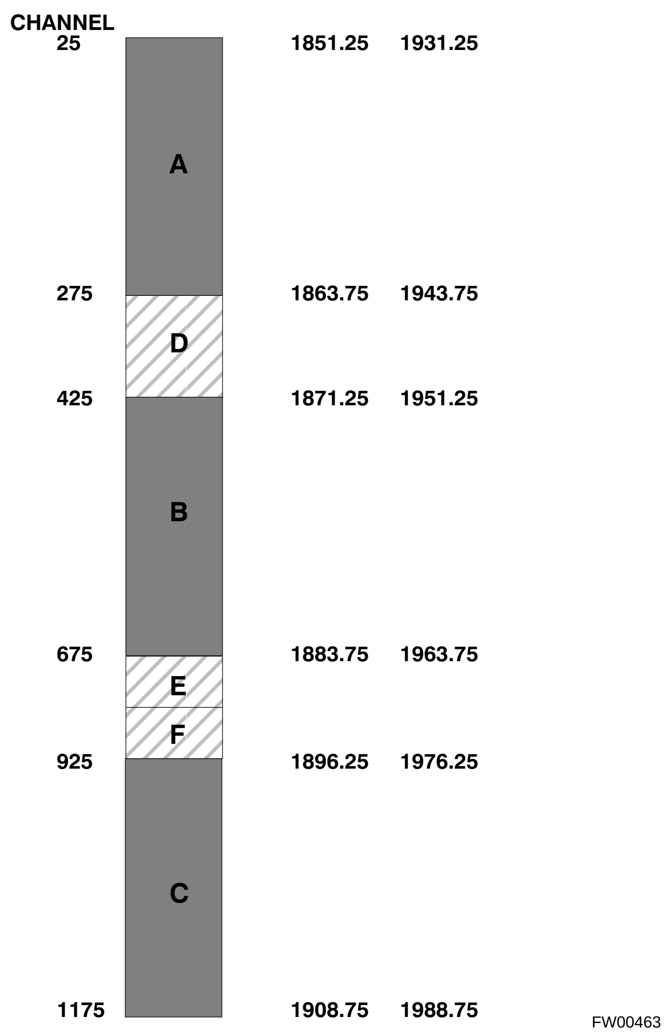
Programming of each of the BTS BBX synthesizers is performed by the BTS GLIs via the CHI bus. This programming data determines the transmit and receive transceiver operating frequencies (channels) for each BBX2.

## 1900 MHz PCS Channels

Figure D-1 shows the valid channels for the North American PCS 1900 MHz frequency spectrum. There are 10 CDMA wireline or non-wireline band channels used in a CDMA system (unique per customer operating system).

D

**Figure D-1:** North America PCS Frequency Spectrum (CDMA Allocation)



# Calculating 1900 MHz Center Frequencies

Table D-1 shows selected 1900 MHz CDMA candidate operating channels, listed in both decimal and hexadecimal, and the corresponding transmit, and receive frequencies. Center frequencies (in MHz) for channels not shown in the table may be calculated as follows:

- TX = 1930 + 0.05 * Channel#
  **Example:** Channel 262
  TX = 1930 + 0.05*262 = 1943.10 MHz
- RX = TX - 80
  **Example:** Channel 262
  RX = 1943.10 - 50 = 1863.10 MHz

Actual frequencies used depend on customer CDMA system frequency plan.

Each CDMA channel requires a 1.77 MHz frequency segment. The actual CDMA carrier is 1.23 MHz wide, with a 0.27 MHz guard band on both sides of the carrier.

Minimum frequency separation required between any CDMA carrier and the nearest NAMPS/AMPS carrier is 900 kHz (center-to-center).

D

**Table D-1:** 1900 MHz TX and RX Frequency vs. Channel

| Channel Number Decimal | Hex | Transmit Frequency (MHz) Center Frequency | Receive Frequency (MHz) Center Frequency |
|---|---|---|---|
| 25 | 0019 | 1931.25 | 1851.25 |
| 50 | 0032 | 1932.50 | 1852.50 |
| 75 | 004B | 1933.75 | 1853.75 |
| 100 | 0064 | 1935.00 | 1855.00 |
| 125 | 007D | 1936.25 | 1856.25 |
| 150 | 0096 | 1937.50 | 1857.50 |
| 175 | 00AF | 1938.75 | 1858.75 |
| 200 | 00C8 | 1940.00 | 1860.00 |
| 225 | 00E1 | 1941.25 | 1861.25 |
| 250 | 00FA | 1942.50 | 1862.50 |
| 275 | 0113 | 1943.75 | 1863.75 |
| 300 | 012C | 1945.00 | 1865.00 |
| 325 | 0145 | 1946.25 | 1866.25 |
| 350 | 015E | 1947.50 | 1867.50 |
| 375 | 0177 | 1948.75 | 1868.75 |
| 400 | 0190 | 1950.00 | 1870.00 |
| 425 | 01A9 | 1951.25 | 1871.25 |
| 450 | 01C2 | 1952.50 | 1872.50 |
| 475 | 01DB | 1953.75 | 1873.75 |
| 500 | 01F4 | 1955.00 | 1875.00 |
| 525 | 020D | 1956.25 | 1876.25 |
| 550 | 0226 | 1957.50 | 1877.50 |
| 575 | 023F | 1958.75 | 1878.75 |
| 600 | 0258 | 1960.00 | 1880.00 |
| 625 | 0271 | 1961.25 | 1881.25 |
| 650 | 028A | 1962.50 | 1882.50 |

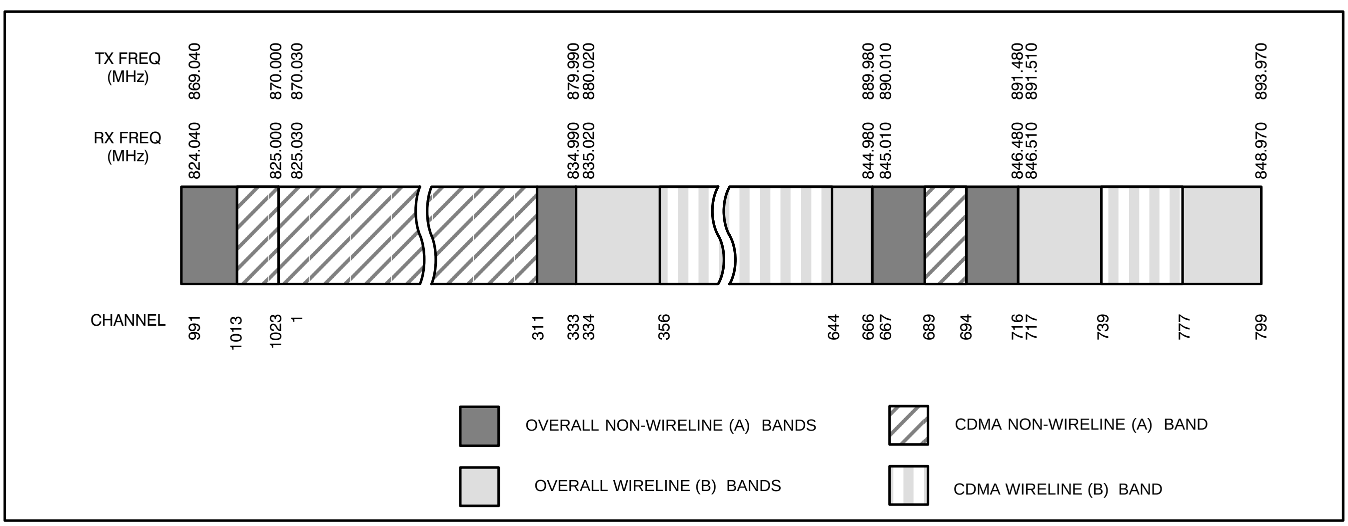
. . . continued on next page

| Table D-1: 1900 MHz TX and RX Frequency vs. Channel | | | |
|---|---|---|---|
| Channel Number Decimal | Hex | Transmit Frequency (MHz) Center Frequency | Receive Frequency (MHz) Center Frequency |
| 675 | 02A3 | 1963.75 | 1883.75 |
| 700 | 02BC | 1965.00 | 1885.00 |
| 725 | 02D5 | 1966.25 | 1886.25 |
| 750 | 02EE | 1967.50 | 1887.50 |
| 775 | 0307 | 1968.75 | 1888.75 |
| 800 | 0320 | 1970.00 | 1890.00 |
| 825 | 0339 | 1971.25 | 1891.25 |
| 850 | 0352 | 1972.50 | 1892.50 |
| 875 | 036B | 1973.75 | 1893.75 |
| 900 | 0384 | 1975.00 | 1895.00 |
| 925 | 039D | 1976.25 | 1896.25 |
| 950 | 03B6 | 1977.50 | 1897.50 |
| 975 | 03CF | 1978.75 | 1898.75 |
| 1000 | 03E8 | 1980.00 | 1900.00 |
| 1025 | 0401 | 1981.25 | 1901.25 |
| 1050 | 041A | 1982.50 | 1902.50 |
| 1075 | 0433 | 1983.75 | 1903.75 |
| 1100 | 044C | 1985.00 | 1905.00 |
| 1125 | 0465 | 1986.25 | 1906.25 |
| 1150 | 047E | 1987.50 | 1807.50 |
| 1175 | 0497 | 1988.75 | 1908.75 |

## 800 MHz CDMA Channels

Figure D-2 shows the valid channels for the North American cellular telephone frequency spectrum. There are 10 CDMA wireline or non-wireline band channels used in a CDMA system (unique per customer operating system).

**Figure D-2:** North American Cellular Telephone System Frequency Spectrum (CDMA Allocation).




FW00402

# Calculating 800 MHz Center Frequencies

Table D-2 shows selected 800 MHz CDMA candidate operating channels, listed in both decimal and hexadecimal, and the corresponding transmit, and receive frequencies. Center frequencies (in MHz) for channels not shown in the table may be calculated as follows:

- Channels 1-777
  TX = 870 + 0.03 * Channel#
  **Example:** Channel 262
  TX = 870 + 0.03*262 = 877.86 MHz
- Channels 1013-1023
  TX = 870 + 0.03 * (Channel# - 1023)
  **Example:** Channel 1015
  TX = 870 +0.03 *(1015 - 1023) = 869.76 MHz
- RX = TX - 45 MHz
  **Example:** Channel 262
  RX = 877.86 -45 = 832.86 MHz



**Table D-2:** 800 MHz TX and RX Frequency vs. Channel

| Channel Number Decimal | Hex | Transmit Frequency (MHz) Center Frequency | Receive Frequency (MHz) Center Frequency |
|---|---|---|---|
| 1 | 0001 | 870.0300 | 825.0300 |
| 25 | 0019 | 870.7500 | 825.7500 |
| 50 | 0032 | 871.5000 | 826.5000 |
| 75 | 004B | 872.2500 | 827.2500 |
| 100 | 0064 | 873.0000 | 828.0000 |
| 125 | 007D | 873.7500 | 828.7500 |
| 150 | 0096 | 874.5000 | 829.5000 |
| 175 | 00AF | 875.2500 | 830.2500 |
| 200 | 00C8 | 876.0000 | 831.0000 |
| 225 | 00E1 | 876.7500 | 831.7500 |
| 250 | 00FA | 877.5000 | 832.5000 |
| 275 | 0113 | 878.2500 | 833.2500 |
| 300 | 012C | 879.0000 | 834.0000 |
| 325 | 0145 | 879.7500 | 834.7500 |
| 350 | 015E | 880.5000 | 835.5000 |
| 375 | 0177 | 881.2500 | 836.2500 |
| 400 | 0190 | 882.0000 | 837.0000 |
| 425 | 01A9 | 882.7500 | 837.7500 |
| 450 | 01C2 | 883.5000 | 838.5000 |
| 475 | 01DB | 884.2500 | 839.2500 |
| 500 | 01F4 | 885.0000 | 840.0000 |
| 525 | 020D | 885.7500 | 840.7500 |
| 550 | 0226 | 886.5000 | 841.5000 |

. . . continued on next page

**Table D-2:** 800 MHz TX and RX Frequency vs. Channel

| Channel Number Decimal | Hex | Transmit Frequency (MHz) Center Frequency | Receive Frequency (MHz) Center Frequency |
|---|---|---|---|
| 575 | 023F | 887.2500 | 842.2500 |
| 600 | 0258 | 888.0000 | 843.0000 |
| 625 | 0271 | 888.7500 | 843.7500 |
| 650 | 028A | 889.5000 | 844.5000 |
| 675 | 02A3 | 890.2500 | 845.2500 |
| 700 | 02BC | 891.0000 | 846.0000 |
| 725 | 02D5 | 891.7500 | 846.7500 |
| 750 | 02EE | 892.5000 | 847.5000 |
| 775 | 0307 | 893.2500 | 848.2500 |
| **NOTE** Channel numbers 778 through 1012 are not used. | | | |
| 1013 | 03F5 | 869.7000 | 824.7000 |
| 1023 | 03FF | 870.0000 | 825.0000 |

D

*Appendix E*

# PN Offset

E

# PN Offset

## Background

All channel elements transmitted from a BTS in a particular 1.25 MHz CDMA channel are orthonogonally spread by 1 of 64 possible Walsh code functions; additionally, they are also spread by a quadrature pair of PN sequences unique to each sector.

Overall, the mobile uses this to differentiate multiple signals transmitted from the same BTS (and surrounding BTS) sectors, and to synchronize to the next strongest sector.

The PN offset per sector is stored on the BBXs, where the corresponding I & Q registers reside.

The PN offset values are determined on a per BTS/per sector(antenna) basis as determined by the appropriate cdf file content. A breakdown of this information is found in Table E-1.

## Usage

There are three basic RF chip delays currently in use. It is important to determine what RF chip delay is valid to be able to test the BTS functionality. This can be done by ascertaining if the CDF file `FineTxAdj` value was set to "on" when the MCC was downloaded with "image data". The `FineTxAdj` value is used to compensate for the processing delay (approximately 20 μS) in the BTS using any type of mobile meeting IS-97 specifications.

Observe the following guidelines:

- If the `FineTxAdj` value in the cdf file is 101 (65 HEX), the FineTxAdj has not been set. The I and Q values from the 0 table MUST be used.

If the `FineTxAdj` value in the cdf file is 213 (D5 HEX), FineTxAdj has been set for the *14 chip table*.

- If the `FineTxAdj` value in the cdf file is 197 (C5 HEX), FineTxAdj has been set for the *13 chip table*.

| NOTE | CDF file I and Q values can be represented in DECIMAL or HEX. If using HEX, add 0x before the HEX value. If necessary, convert HEX values in Table E-1 to decimal before comparing them to cdf file I & Q value assignments. |
|---|---|

- If you are using a Qualcomm mobile, use the I and Q values from the 13 chip delay table.
- If you are using a mobile that does not have the 1 chip offset problem, (any mobile meeting the IS-97 specification), use the 14 chip delay table.

| NOTE | If the wrong I and Q values are used with the wrong `FineTxAdj` parameter, system timing problems will occur. This will cause the energy transmitted to be "smeared" over several Walsh codes (instead of the single Walsh code that it was assigned to), causing erratic operation. Evidence of smearing is usually identified by Walsh channels not at correct levels or present when not selected in the Code Domain Power Test. |
|---|---|

E

**Table E-1:** PnMaskI and PnMaskQ Values for PilotPn

| Pilot PN | 14-Chip Delay | | | | 13-Chip Delay | | | | 0-Chip Delay | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | I (Dec.) | Q (Dec.) | I (Hex.) | Q (Hex.) | I (Dec.) | Q (Dec.) | I (Hex.) | Q (Hex.) | I (Dec.) | Q (Dec.) | I (Hex.) | Q (Hex.) |
| 0 | 17523 | 23459 | 4473 | 5BA3 | 29673 | 25581 | 73E9 | 63ED | 4096 | 4096 | 1000 | 1000 |
| 1 | 32292 | 32589 | 7E24 | 7F4D | 16146 | 29082 | 3F12 | 719A | 9167 | 1571 | 23CF | 0623 |
| 2 | 4700 | 17398 | 125C | 43F6 | 2350 | 8699 | 092E | 21FB | 22417 | 7484 | 5791 | 1D3C |
| 3 | 14406 | 26333 | 3846 | 66DD | 7203 | 32082 | 1C23 | 7D52 | 966 | 6319 | 03C6 | 18AF |
| 4 | 14899 | 4011 | 3A33 | 0FAB | 19657 | 18921 | 4CC9 | 49E9 | 14189 | 2447 | 376D | 098F |
| 5 | 17025 | 2256 | 4281 | 08D0 | 28816 | 1128 | 7090 | 0468 | 29150 | 24441 | 71DE | 5F79 |
| 6 | 14745 | 18651 | 3999 | 48DB | 19740 | 27217 | 4D1C | 6A51 | 18245 | 27351 | 4745 | 6AD7 |
| 7 | 2783 | 1094 | 0ADF | 0446 | 21695 | 547 | 54BF | 0223 | 1716 | 23613 | 06B4 | 5C3D |
| 8 | 5832 | 21202 | 16C8 | 52D2 | 2916 | 10601 | 0B64 | 2969 | 11915 | 29008 | 2E8B | 7150 |
| 9 | 12407 | 13841 | 3077 | 3611 | 18923 | 21812 | 49EB | 5534 | 20981 | 5643 | 51F5 | 160B |
| 10 | 31295 | 31767 | 7A3F | 7C17 | 27855 | 28727 | 6CCF | 7037 | 24694 | 28085 | 6076 | 6DB5 |
| 11 | 7581 | 18890 | 1D9D | 49CA | 24350 | 9445 | 5F1E | 24E5 | 11865 | 18200 | 2E59 | 4718 |
| 12 | 18523 | 30999 | 485B | 7917 | 30205 | 29367 | 75FD | 72B7 | 6385 | 21138 | 18F1 | 5292 |
| 13 | 29920 | 22420 | 74E0 | 5794 | 14960 | 11210 | 3A70 | 2BCA | 27896 | 21937 | 6CF8 | 55B1 |
| 14 | 25184 | 20168 | 6260 | 4EC8 | 12592 | 10084 | 3130 | 2764 | 25240 | 25222 | 6298 | 6286 |
| 15 | 26282 | 12354 | 66AA | 3042 | 13141 | 6177 | 3355 | 1821 | 30877 | 109 | 789D | 006D |
| 16 | 30623 | 11187 | 779F | 2BB3 | 27167 | 23525 | 6A1F | 5BE5 | 30618 | 6028 | 779A | 178C |
| 17 | 15540 | 11834 | 3CB4 | 2E3A | 7770 | 5917 | 1E5A | 171D | 26373 | 22034 | 6705 | 5612 |
| 18 | 23026 | 10395 | 59F2 | 289B | 11513 | 23153 | 2CF9 | 5A71 | 314 | 15069 | 013A | 3ADD |
| 19 | 20019 | 28035 | 4E33 | 6D83 | 30409 | 30973 | 76C9 | 78FD | 17518 | 4671 | 446E | 123F |
| 20 | 4050 | 27399 | 0FD2 | 6B07 | 2025 | 31679 | 07E9 | 7BBF | 21927 | 30434 | 55A7 | 76E2 |
| 21 | 1557 | 22087 | 0615 | 5647 | 21210 | 25887 | 52DA | 651F | 2245 | 11615 | 08C5 | 2D5F |
| 22 | 30262 | 2077 | 7636 | 081D | 15131 | 18994 | 3B1B | 4A32 | 18105 | 19838 | 46B9 | 4D7E |
| 23 | 18000 | 13758 | 4650 | 35BE | 9000 | 6879 | 2328 | 1ADF | 8792 | 14713 | 2258 | 3979 |
| 24 | 20056 | 11778 | 4E58 | 2E02 | 10028 | 5889 | 272C | 1701 | 21440 | 241 | 53C0 | 00F1 |
| 25 | 12143 | 3543 | 2F6F | 0DD7 | 18023 | 18647 | 4667 | 48D7 | 15493 | 24083 | 3C85 | 5E13 |
| 26 | 17437 | 7184 | 441D | 1C10 | 29662 | 3592 | 73DE | 0E08 | 26677 | 7621 | 6835 | 1DC5 |
| 27 | 17438 | 2362 | 441E | 093A | 8719 | 1181 | 220F | 049D | 11299 | 19144 | 2C23 | 4AC8 |
| 28 | 5102 | 25840 | 13EE | 64F0 | 2551 | 12920 | 09F7 | 3278 | 12081 | 1047 | 2F31 | 0417 |
| 29 | 9302 | 12177 | 2456 | 2F91 | 4651 | 23028 | 122B | 59F4 | 23833 | 26152 | 5D19 | 6628 |
| 30 | 17154 | 10402 | 4302 | 28A2 | 8577 | 5201 | 2181 | 1451 | 20281 | 22402 | 4F39 | 5782 |
| 31 | 5198 | 1917 | 144E | 077D | 2599 | 19842 | 0A27 | 4D82 | 10676 | 21255 | 29B4 | 5307 |
| 32 | 4606 | 17708 | 11FE | 452C | 2303 | 8854 | 08FF | 2296 | 16981 | 30179 | 4255 | 75E3 |
| 33 | 24804 | 10630 | 60E4 | 2986 | 12402 | 5315 | 3072 | 14C3 | 31964 | 7408 | 7CDC | 1CF0 |
| 34 | 17180 | 6812 | 431C | 1A9C | 8590 | 3406 | 218E | 0D4E | 26913 | 115 | 6921 | 0073 |
| 35 | 10507 | 14350 | 290B | 380E | 17749 | 7175 | 4555 | 1C07 | 14080 | 1591 | 3700 | 0637 |
| 36 | 10157 | 10999 | 27AD | 2AF7 | 16902 | 23367 | 4206 | 5B47 | 23842 | 1006 | 5D22 | 03EE |
| 37 | 23850 | 25003 | 5D2A | 61AB | 11925 | 32489 | 2E95 | 7EE9 | 27197 | 32263 | 6A3D | 7E07 |
| 38 | 31425 | 2652 | 7AC1 | 0A5C | 27824 | 1326 | 6CB0 | 052E | 22933 | 1332 | 5995 | 0534 |
| 39 | 4075 | 19898 | 0FEB | 4DBA | 22053 | 9949 | 5625 | 26DD | 30220 | 12636 | 760C | 315C |
| 40 | 10030 | 2010 | 272E | 07DA | 5015 | 1005 | 1397 | 03ED | 12443 | 4099 | 309B | 1003 |
| 41 | 16984 | 25936 | 4258 | 6550 | 8492 | 12968 | 212C | 32A8 | 19854 | 386 | 4D8E | 0182 |
| 42 | 14225 | 28531 | 3791 | 6F73 | 18968 | 31109 | 4A18 | 7985 | 14842 | 29231 | 39FA | 722F |
| 43 | 26519 | 11952 | 6797 | 2EB0 | 25115 | 5976 | 621B | 1758 | 15006 | 25711 | 3A9E | 646F |
| 44 | 27775 | 31947 | 6C7F | 7CCB | 26607 | 28761 | 67EF | 7059 | 702 | 10913 | 02BE | 2AA1 |
| 45 | 30100 | 25589 | 7594 | 63F5 | 15050 | 32710 | 3ACA | 7FC6 | 21373 | 8132 | 537D | 1FC4 |
| 46 | 7922 | 11345 | 1EF2 | 2C51 | 3961 | 22548 | 0F79 | 5814 | 23874 | 20844 | 5D42 | 516C |
| 47 | 14199 | 28198 | 3777 | 6E26 | 19051 | 14099 | 4A6B | 3713 | 3468 | 13150 | 0D8C | 335E |
| 48 | 17637 | 13947 | 44E5 | 367B | 29602 | 21761 | 73A2 | 5501 | 31323 | 18184 | 7A5B | 4708 |
| 49 | 23081 | 8462 | 5A29 | 210E | 31940 | 4231 | 7CC4 | 1087 | 29266 | 19066 | 7252 | 4A7A |
| 50 | 5099 | 9595 | 13EB | 257B | 22565 | 23681 | 5825 | 5C81 | 16554 | 29963 | 40AA | 750B |

. . . continued on next page

**Table E-1:** PnMaskI and PnMaskQ Values for PilotPn

| Pilot PN | 14-Chip Delay I (Dec.) | 14-Chip Delay Q (Dec.) | 14-Chip Delay I (Hex.) | 14-Chip Delay Q (Hex.) | 13-Chip Delay I (Dec.) | 13-Chip Delay Q (Dec.) | 13-Chip Delay I (Hex.) | 13-Chip Delay Q (Hex.) | 0-Chip Delay I (Dec.) | 0-Chip Delay Q (Dec.) | 0-Chip Delay I (Hex.) | 0-Chip Delay Q (Hex.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 51 | 32743 | 4670 | 7FE7 | 123E | 28195 | 2335 | 6E23 | 091F | 22575 | 6605 | 582F | 19CD |
| 52 | 7114 | 14672 | 1BCA | 3950 | 3557 | 7336 | 0DE5 | 1CA8 | 31456 | 29417 | 7AE0 | 72E9 |
| 53 | 7699 | 29415 | 1E13 | 72E7 | 24281 | 30543 | 5ED9 | 774F | 8148 | 22993 | 1FD4 | 59D1 |
| 54 | 19339 | 20610 | 4B8B | 5082 | 29717 | 10305 | 7415 | 2841 | 19043 | 27657 | 4A63 | 6C09 |
| 55 | 28212 | 6479 | 6E34 | 194F | 14106 | 17051 | 371A | 429B | 25438 | 5468 | 635E | 155C |
| 56 | 29587 | 10957 | 7393 | 2ACD | 26649 | 23386 | 6819 | 5B5A | 10938 | 8821 | 2ABA | 2275 |
| 57 | 19715 | 18426 | 4D03 | 47FA | 30545 | 9213 | 7751 | 23FD | 2311 | 20773 | 0907 | 5125 |
| 58 | 14901 | 22726 | 3A35 | 58C6 | 19658 | 11363 | 4CCA | 2C63 | 7392 | 4920 | 1CE0 | 1338 |
| 59 | 20160 | 5247 | 4EC0 | 147F | 10080 | 17411 | 2760 | 4403 | 30714 | 5756 | 77FA | 167C |
| 60 | 22249 | 29953 | 56E9 | 7501 | 31396 | 29884 | 7AA4 | 74BC | 180 | 28088 | 00B4 | 6DB8 |
| 61 | 26582 | 5796 | 67D6 | 16A4 | 13291 | 2898 | 33EB | 0B52 | 8948 | 740 | 22F4 | 02E4 |
| 62 | 7153 | 16829 | 1BF1 | 41BD | 23592 | 28386 | 5C28 | 6EE2 | 16432 | 23397 | 4030 | 5B65 |
| 63 | 15127 | 4528 | 3B17 | 11B0 | 19547 | 2264 | 4C5B | 08D8 | 9622 | 19492 | 2596 | 4C24 |
| 64 | 15274 | 5415 | 3BAA | 1527 | 7637 | 17583 | 1DD5 | 44AF | 7524 | 26451 | 1D64 | 6753 |
| 65 | 23149 | 10294 | 5A6D | 2836 | 31974 | 5147 | 7CE6 | 141B | 1443 | 30666 | 05A3 | 77CA |
| 66 | 16340 | 17046 | 3FD4 | 4296 | 8170 | 8523 | 1FEA | 214B | 1810 | 15088 | 0712 | 3AF0 |
| 67 | 27052 | 7846 | 69AC | 1EA6 | 13526 | 3923 | 34D6 | 0F53 | 6941 | 26131 | 1B1D | 6613 |
| 68 | 13519 | 10762 | 34CF | 2A0A | 19383 | 5381 | 4BB7 | 1505 | 3238 | 15969 | 0CA6 | 3E61 |
| 69 | 10620 | 13814 | 297C | 35F6 | 5310 | 6907 | 14BE | 1AFB | 8141 | 24101 | 1FCD | 5E25 |
| 70 | 15978 | 16854 | 3E6A | 41D6 | 7989 | 8427 | 1F35 | 20EB | 10408 | 12762 | 28A8 | 31DA |
| 71 | 27966 | 795 | 6D3E | 031B | 13983 | 20401 | 369F | 4FB1 | 18826 | 19997 | 498A | 4E1D |
| 72 | 12479 | 9774 | 30BF | 262E | 18831 | 4887 | 498F | 1317 | 22705 | 22971 | 58B1 | 59BB |
| 73 | 1536 | 24291 | 0600 | 5EE3 | 768 | 24909 | 0300 | 614D | 3879 | 12560 | 0F27 | 3110 |
| 74 | 3199 | 3172 | 0C7F | 0C64 | 22511 | 1586 | 57EF | 0632 | 21359 | 31213 | 536F | 79ED |
| 75 | 4549 | 2229 | 11C5 | 08B5 | 22834 | 19046 | 5932 | 4A66 | 30853 | 18780 | 7885 | 495C |
| 76 | 17888 | 21283 | 45E0 | 5323 | 8944 | 26541 | 22F0 | 67AD | 18078 | 16353 | 469E | 3FE1 |
| 77 | 13117 | 16905 | 333D | 4209 | 18510 | 28472 | 484E | 6F38 | 15910 | 12055 | 3E26 | 2F17 |
| 78 | 7506 | 7062 | 1D52 | 1B96 | 3753 | 3531 | 0EA9 | 0DCB | 20989 | 30396 | 51FD | 76BC |
| 79 | 27626 | 7532 | 6BEA | 1D6C | 13813 | 3766 | 35F5 | 0EB6 | 28810 | 24388 | 708A | 5F44 |
| 80 | 31109 | 25575 | 7985 | 63E7 | 27922 | 32719 | 6D12 | 7FCF | 30759 | 1555 | 7827 | 0613 |
| 81 | 29755 | 14244 | 743B | 37A4 | 27597 | 7122 | 6BCD | 1BD2 | 18899 | 13316 | 49D3 | 3404 |
| 82 | 26711 | 28053 | 6857 | 6D95 | 26107 | 30966 | 65FB | 78F6 | 7739 | 31073 | 1E3B | 7961 |
| 83 | 20397 | 30408 | 4FAD | 76C8 | 30214 | 15204 | 7606 | 3B64 | 6279 | 6187 | 1887 | 182B |
| 84 | 18608 | 5094 | 48B0 | 13E6 | 9304 | 2547 | 2458 | 09F3 | 9968 | 21644 | 26F0 | 548C |
| 85 | 7391 | 16222 | 1CDF | 3F5E | 24511 | 8111 | 5FBF | 1FAF | 8571 | 9289 | 217B | 2449 |
| 86 | 23168 | 7159 | 5A80 | 1BF7 | 11584 | 17351 | 2D40 | 43C7 | 4143 | 4624 | 102F | 1210 |
| 87 | 23466 | 174 | 5BAA | 00AE | 11733 | 87 | 2DD5 | 0057 | 19637 | 467 | 4CB5 | 01D3 |
| 88 | 15932 | 25530 | 3E3C | 63BA | 7966 | 12765 | 1F1E | 31DD | 11867 | 18133 | 2E5B | 46D5 |
| 89 | 25798 | 2320 | 64C6 | 0910 | 12899 | 1160 | 3263 | 0488 | 7374 | 1532 | 1CCE | 05FC |
| 90 | 28134 | 23113 | 6DE6 | 5A49 | 14067 | 25368 | 36F3 | 6318 | 10423 | 1457 | 28B7 | 05B1 |
| 91 | 28024 | 23985 | 6D78 | 5DB1 | 14012 | 24804 | 36BC | 60E4 | 9984 | 9197 | 2700 | 23ED |
| 92 | 6335 | 2604 | 18BF | 0A2C | 23951 | 1302 | 5D8F | 0516 | 7445 | 13451 | 1D15 | 348B |
| 93 | 21508 | 1826 | 5404 | 0722 | 10754 | 913 | 2A02 | 0391 | 4133 | 25785 | 1025 | 64B9 |
| 94 | 26338 | 30853 | 66E2 | 7885 | 13169 | 29310 | 3371 | 727E | 22646 | 4087 | 5876 | 0FF7 |
| 95 | 17186 | 15699 | 4322 | 3D53 | 8593 | 20629 | 2191 | 5095 | 15466 | 31190 | 3C6A | 79D6 |
| 96 | 22462 | 2589 | 57BE | 0A1D | 11231 | 19250 | 2BDF | 4B32 | 2164 | 8383 | 0874 | 20BF |
| 97 | 3908 | 25000 | 0F44 | 61A8 | 1954 | 12500 | 07A2 | 30D4 | 16380 | 12995 | 3FFC | 32C3 |
| 98 | 25390 | 18163 | 632E | 46F3 | 12695 | 27973 | 3197 | 6D45 | 15008 | 27438 | 3AA0 | 6B2E |
| 99 | 27891 | 12555 | 6CF3 | 310B | 26537 | 22201 | 67A9 | 56B9 | 31755 | 9297 | 7C0B | 2451 |
| 100 | 9620 | 8670 | 2594 | 21DE | 4810 | 4335 | 12CA | 10EF | 31636 | 1676 | 7B94 | 068C |

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**Table E-1:** PnMaskI and PnMaskQ Values for PilotPn

| Pilot PN | 14-Chip Delay | | | | 13-Chip Delay | | | | 0-Chip Delay | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | I (Dec.) | Q (Dec.) | I (Hex.) | Q (Hex.) | I (Dec.) | Q (Dec.) | I (Hex.) | Q (Hex.) | I (Dec.) | Q (Dec.) | I (Hex.) | Q (Hex.) |
| 101 | 6491 | 1290 | 195B | 050A | 23933 | 645 | 5D7D | 0285 | 25414 | 12596 | 6346 | 3134 |
| 102 | 16876 | 4407 | 41EC | 1137 | 8438 | 18087 | 20F6 | 46A7 | 7102 | 19975 | 1BBE | 4E07 |
| 103 | 17034 | 1163 | 428A | 048B | 8517 | 19577 | 2145 | 4C79 | 20516 | 20026 | 5024 | 4E3A |
| 104 | 32405 | 12215 | 7E95 | 2FB7 | 28314 | 23015 | 6E9A | 59E7 | 19495 | 8958 | 4C27 | 22FE |
| 105 | 27417 | 7253 | 6B19 | 1C55 | 25692 | 16406 | 645C | 4016 | 17182 | 19143 | 431E | 4AC7 |
| 106 | 8382 | 8978 | 20BE | 2312 | 4191 | 4489 | 105F | 1189 | 11572 | 17142 | 2D34 | 42F6 |
| 107 | 5624 | 25547 | 15F8 | 63CB | 2812 | 32729 | 0AFC | 7FD9 | 25570 | 19670 | 63E2 | 4CD6 |
| 108 | 1424 | 3130 | 0590 | 0C3A | 712 | 1565 | 02C8 | 061D | 6322 | 30191 | 18B2 | 75EF |
| 109 | 13034 | 31406 | 32EA | 7AAE | 6517 | 15703 | 1975 | 3D57 | 8009 | 5822 | 1F49 | 16BE |
| 110 | 15682 | 6222 | 3D42 | 184E | 7841 | 3111 | 1EA1 | 0C27 | 26708 | 22076 | 6854 | 563C |
| 111 | 27101 | 20340 | 69DD | 4F74 | 25918 | 10170 | 653E | 27BA | 6237 | 606 | 185D | 025E |
| 112 | 8521 | 25094 | 2149 | 6206 | 16756 | 12547 | 4174 | 3103 | 32520 | 9741 | 7F08 | 260D |
| 113 | 30232 | 23380 | 7618 | 5B54 | 15116 | 11690 | 3B0C | 2DAA | 31627 | 9116 | 7B8B | 239C |
| 114 | 6429 | 10926 | 191D | 2AAE | 23902 | 5463 | 5D5E | 1557 | 3532 | 12705 | 0DCC | 31A1 |
| 115 | 27116 | 22821 | 69EC | 5925 | 13558 | 25262 | 34F6 | 62AE | 24090 | 17502 | 5E1A | 445E |
| 116 | 4238 | 31634 | 108E | 7B92 | 2119 | 15817 | 0847 | 3DC9 | 20262 | 18952 | 4F26 | 4A08 |
| 117 | 5128 | 4403 | 1408 | 1133 | 2564 | 18085 | 0A04 | 46A5 | 18238 | 15502 | 473E | 3C8E |
| 118 | 14846 | 689 | 39FE | 02B1 | 7423 | 20324 | 1CFF | 4F64 | 2033 | 17819 | 07F1 | 459B |
| 119 | 13024 | 27045 | 32E0 | 69A5 | 6512 | 31470 | 1970 | 7AEE | 25566 | 4370 | 63DE | 1112 |
| 120 | 10625 | 27557 | 2981 | 6BA5 | 17680 | 31726 | 4510 | 7BEE | 25144 | 31955 | 6238 | 7CD3 |
| 121 | 31724 | 16307 | 7BEC | 3FB3 | 15862 | 20965 | 3DF6 | 51E5 | 29679 | 30569 | 73EF | 7769 |
| 122 | 13811 | 22338 | 35F3 | 5742 | 19241 | 11169 | 4B29 | 2BA1 | 5064 | 7350 | 13C8 | 1CB6 |
| 123 | 24915 | 27550 | 6153 | 6B9E | 24953 | 13775 | 6179 | 35CF | 27623 | 26356 | 6BE7 | 66F4 |
| 124 | 1213 | 22096 | 04BD | 5650 | 21390 | 11048 | 538E | 2B28 | 13000 | 32189 | 32C8 | 7DBD |
| 125 | 2290 | 23136 | 08F2 | 5A60 | 1145 | 11568 | 0479 | 2D30 | 31373 | 1601 | 7A8D | 0641 |
| 126 | 31551 | 12199 | 7B3F | 2FA7 | 27727 | 23023 | 6C4F | 59EF | 13096 | 19537 | 3328 | 4C51 |
| 127 | 12088 | 1213 | 2F38 | 04BD | 6044 | 19554 | 179C | 4C62 | 26395 | 25667 | 671B | 6443 |
| 128 | 7722 | 936 | 1E2A | 03A8 | 3861 | 468 | 0F15 | 01D4 | 15487 | 4415 | 3C7F | 113F |
| 129 | 27312 | 6272 | 6AB0 | 1880 | 13656 | 3136 | 3558 | 0C40 | 29245 | 2303 | 723D | 08FF |
| 130 | 23130 | 32446 | 5A5A | 7EBE | 11565 | 16223 | 2D2D | 3F5F | 26729 | 16362 | 6869 | 3FEA |
| 131 | 594 | 13555 | 0252 | 34F3 | 297 | 21573 | 0129 | 5445 | 12568 | 28620 | 3118 | 6FCC |
| 132 | 25804 | 8789 | 64CC | 2255 | 12902 | 24342 | 3266 | 5F16 | 24665 | 6736 | 6059 | 1A50 |
| 133 | 31013 | 24821 | 7925 | 60F5 | 27970 | 32326 | 6D42 | 7E46 | 8923 | 2777 | 22DB | 0AD9 |
| 134 | 32585 | 21068 | 7F49 | 524C | 28276 | 10534 | 6E74 | 2926 | 19634 | 24331 | 4CB2 | 5F0B |
| 135 | 3077 | 31891 | 0C05 | 7C93 | 22482 | 28789 | 57D2 | 7075 | 29141 | 9042 | 71D5 | 2352 |
| 136 | 17231 | 5321 | 434F | 14C9 | 28791 | 17496 | 7077 | 4458 | 73 | 107 | 0049 | 006B |
| 137 | 31554 | 551 | 7B42 | 0227 | 15777 | 20271 | 3DA1 | 4F2F | 26482 | 4779 | 6772 | 12AB |
| 138 | 8764 | 12115 | 223C | 2F53 | 4382 | 22933 | 111E | 5995 | 6397 | 13065 | 18FD | 3309 |
| 139 | 15375 | 4902 | 3C0F | 1326 | 20439 | 2451 | 4FD7 | 0993 | 29818 | 30421 | 747A | 76D5 |
| 140 | 13428 | 1991 | 3474 | 07C7 | 6714 | 19935 | 1A3A | 4DDF | 8153 | 20210 | 1FD9 | 4EF2 |
| 141 | 17658 | 14404 | 44FA | 3844 | 8829 | 7202 | 227D | 1C22 | 302 | 5651 | 012E | 1613 |
| 142 | 13475 | 17982 | 34A3 | 463E | 19329 | 8991 | 4B81 | 231F | 28136 | 31017 | 6DE8 | 7929 |
| 143 | 22095 | 19566 | 564F | 4C6E | 31479 | 9783 | 7AF7 | 2637 | 29125 | 30719 | 71C5 | 77FF |
| 144 | 24805 | 2970 | 60E5 | 0B9A | 24994 | 1485 | 61A2 | 05CD | 8625 | 23104 | 21B1 | 5A40 |
| 145 | 4307 | 23055 | 10D3 | 5A0F | 22969 | 25403 | 59B9 | 633B | 26671 | 7799 | 682F | 1E77 |
| 146 | 23292 | 15158 | 5AFC | 3B36 | 11646 | 7579 | 2D7E | 1D9B | 6424 | 17865 | 1918 | 45C9 |
| 147 | 1377 | 29094 | 0561 | 71A6 | 21344 | 14547 | 5360 | 38D3 | 12893 | 26951 | 325D | 6947 |
| 148 | 28654 | 653 | 6FEE | 028D | 14327 | 20346 | 37F7 | 4F7A | 18502 | 25073 | 4846 | 61F1 |
| 149 | 6350 | 19155 | 18CE | 4AD3 | 3175 | 27477 | 0C67 | 6B55 | 7765 | 32381 | 1E55 | 7E7D |
| 150 | 16770 | 23588 | 4182 | 5C24 | 8385 | 11794 | 20C1 | 2E12 | 25483 | 16581 | 638B | 40C5 |

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**Table E-1:** PnMaskI and PnMaskQ Values for PilotPn

| Pilot PN | 14-Chip Delay | | | | 13-Chip Delay | | | | 0-Chip Delay | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | I (Dec.) | Q (Dec.) | I (Hex.) | Q (Hex.) | I (Dec.) | Q (Dec.) | I (Hex.) | Q (Hex.) | I (Dec.) | Q (Dec.) | I (Hex.) | Q (Hex.) |
| 151 | 14726 | 10878 | 3986 | 2A7E | 7363 | 5439 | 1CC3 | 153F | 15408 | 32087 | 3C30 | 7D57 |
| 152 | 25685 | 31060 | 6455 | 7954 | 25594 | 15530 | 63FA | 3CAA | 6414 | 97 | 190E | 0061 |
| 153 | 21356 | 30875 | 536C | 789B | 10678 | 29297 | 29B6 | 7271 | 8164 | 7618 | 1FE4 | 1DC2 |
| 154 | 12149 | 11496 | 2F75 | 2CE8 | 18026 | 5748 | 466A | 1674 | 10347 | 93 | 286B | 005D |
| 155 | 28966 | 24545 | 7126 | 5FE1 | 14483 | 25036 | 3893 | 61CC | 29369 | 16052 | 72B9 | 3EB4 |
| 156 | 22898 | 9586 | 5972 | 2572 | 11449 | 4793 | 2CB9 | 12B9 | 10389 | 14300 | 2895 | 37DC |
| 157 | 1713 | 20984 | 06B1 | 51F8 | 21128 | 10492 | 5288 | 28FC | 24783 | 11129 | 60CF | 2B79 |
| 158 | 30010 | 30389 | 753A | 76B5 | 15005 | 30054 | 3A9D | 7566 | 18400 | 6602 | 47E0 | 19CA |
| 159 | 2365 | 7298 | 093D | 1C82 | 21838 | 3649 | 554E | 0E41 | 22135 | 14460 | 5677 | 387C |
| 160 | 27179 | 18934 | 6A2B | 49F6 | 25797 | 9467 | 64C5 | 24FB | 4625 | 25458 | 1211 | 6372 |
| 161 | 29740 | 23137 | 742C | 5A61 | 14870 | 25356 | 3A16 | 630C | 22346 | 15869 | 574A | 3DFD |
| 162 | 5665 | 24597 | 1621 | 6015 | 23232 | 32310 | 5AC0 | 7E36 | 2545 | 27047 | 09F1 | 69A7 |
| 163 | 23671 | 23301 | 5C77 | 5B05 | 32747 | 25534 | 7FEB | 63BE | 7786 | 26808 | 1E6A | 68B8 |
| 164 | 1680 | 7764 | 0690 | 1E54 | 840 | 3882 | 0348 | 0F2A | 20209 | 7354 | 4EF1 | 1CBA |
| 165 | 25861 | 14518 | 6505 | 38B6 | 25426 | 7259 | 6352 | 1C5B | 26414 | 27834 | 672E | 6CBA |
| 166 | 25712 | 21634 | 6470 | 5482 | 12856 | 10817 | 3238 | 2A41 | 1478 | 11250 | 05C6 | 2BF2 |
| 167 | 19245 | 11546 | 4B2D | 2D1A | 29766 | 5773 | 7446 | 168D | 15122 | 552 | 3B12 | 0228 |
| 168 | 26887 | 26454 | 6907 | 6756 | 25939 | 13227 | 6553 | 33AB | 24603 | 27058 | 601B | 69B2 |
| 169 | 30897 | 15938 | 78B1 | 3E42 | 28040 | 7969 | 6D88 | 1F21 | 677 | 14808 | 02A5 | 39D8 |
| 170 | 11496 | 9050 | 2CE8 | 235A | 5748 | 4525 | 1674 | 11AD | 13705 | 9642 | 3589 | 25AA |
| 171 | 1278 | 3103 | 04FE | 0C1F | 639 | 18483 | 027F | 4833 | 13273 | 32253 | 33D9 | 7DFD |
| 172 | 31555 | 758 | 7B43 | 02F6 | 27761 | 379 | 6C71 | 017B | 14879 | 26081 | 3A1F | 65E1 |
| 173 | 29171 | 16528 | 71F3 | 4090 | 26921 | 8264 | 6929 | 2048 | 6643 | 21184 | 19F3 | 52C0 |
| 174 | 20472 | 20375 | 4FF8 | 4F97 | 10236 | 27127 | 27FC | 69F7 | 23138 | 11748 | 5A62 | 2DE4 |
| 175 | 5816 | 10208 | 16B8 | 27E0 | 2908 | 5104 | 0B5C | 13F0 | 28838 | 32676 | 70A6 | 7FA4 |
| 176 | 30270 | 17698 | 763E | 4522 | 15135 | 8849 | 3B1F | 2291 | 9045 | 2425 | 2355 | 0979 |
| 177 | 22188 | 8405 | 56AC | 20D5 | 11094 | 24150 | 2B56 | 5E56 | 10792 | 19455 | 2A28 | 4BFF |
| 178 | 6182 | 28634 | 1826 | 6FDA | 3091 | 14317 | 0C13 | 37ED | 25666 | 19889 | 6442 | 4DB1 |
| 179 | 32333 | 1951 | 7E4D | 079F | 28406 | 19955 | 6EF6 | 4DF3 | 11546 | 18177 | 2D1A | 4701 |
| 180 | 14046 | 20344 | 36DE | 4F78 | 7023 | 10172 | 1B6F | 27BC | 15535 | 2492 | 3CAF | 09BC |
| 181 | 15873 | 26696 | 3E01 | 6848 | 20176 | 13348 | 4ED0 | 3424 | 16134 | 15086 | 3F06 | 3AEE |
| 182 | 19843 | 3355 | 4D83 | 0D1B | 30481 | 18609 | 7711 | 48B1 | 8360 | 30632 | 20A8 | 77A8 |
| 183 | 29367 | 11975 | 72B7 | 2EC7 | 26763 | 22879 | 688B | 595F | 14401 | 27549 | 3841 | 6B9D |
| 184 | 13352 | 31942 | 3428 | 7CC6 | 6676 | 15971 | 1A14 | 3E63 | 26045 | 6911 | 65BD | 1AFF |
| 185 | 22977 | 9737 | 59C1 | 2609 | 32048 | 23864 | 7D30 | 5D38 | 24070 | 9937 | 5E06 | 26D1 |
| 186 | 31691 | 9638 | 7BCB | 25A6 | 27701 | 4819 | 6C35 | 12D3 | 30300 | 2467 | 765C | 09A3 |
| 187 | 10637 | 30643 | 298D | 77B3 | 17686 | 30181 | 4516 | 75E5 | 13602 | 25831 | 3522 | 64E7 |
| 188 | 25454 | 13230 | 636E | 33AE | 12727 | 6615 | 31B7 | 19D7 | 32679 | 32236 | 7FA7 | 7DEC |
| 189 | 18610 | 22185 | 48B2 | 56A9 | 9305 | 25960 | 2459 | 6568 | 16267 | 12987 | 3F8B | 32BB |
| 190 | 6368 | 2055 | 18E0 | 0807 | 3184 | 19007 | 0C70 | 4A3F | 9063 | 11714 | 2367 | 2DC2 |
| 191 | 7887 | 8767 | 1ECF | 223F | 24247 | 24355 | 5EB7 | 5F23 | 19487 | 19283 | 4C1F | 4B53 |
| 192 | 7730 | 15852 | 1E32 | 3DEC | 3865 | 7926 | 0F19 | 1EF6 | 12778 | 11542 | 31EA | 2D16 |
| 193 | 23476 | 16125 | 5BB4 | 3EFD | 11738 | 20802 | 2DDA | 5142 | 27309 | 27928 | 6AAD | 6D18 |
| 194 | 889 | 6074 | 0379 | 17BA | 20588 | 3037 | 506C | 0BDD | 12527 | 26637 | 30EF | 680D |
| 195 | 21141 | 31245 | 5295 | 7A0D | 30874 | 29498 | 789A | 733A | 953 | 10035 | 03B9 | 2733 |
| 196 | 20520 | 15880 | 5028 | 3E08 | 10260 | 7940 | 2814 | 1F04 | 15958 | 10748 | 3E56 | 29FC |
| 197 | 21669 | 20371 | 54A5 | 4F93 | 31618 | 27125 | 7B82 | 69F5 | 6068 | 24429 | 17B4 | 5F6D |
| 198 | 15967 | 8666 | 3E5F | 21DA | 20223 | 4333 | 4EFF | 10ED | 23577 | 29701 | 5C19 | 7405 |
| 199 | 21639 | 816 | 5487 | 0330 | 31635 | 408 | 7B93 | 0198 | 32156 | 14997 | 7D9C | 3A95 |
| 200 | 31120 | 22309 | 7990 | 5725 | 15560 | 26030 | 3CC8 | 65AE | 32709 | 32235 | 7FC5 | 7DEB |

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E

**Table E-1:** PnMaskI and PnMaskQ Values for PilotPn

| Pilot PN | 14-Chip Delay | | | | 13-Chip Delay | | | | 0-Chip Delay | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | I (Dec.) | Q (Dec.) | I (Hex.) | Q (Hex.) | I (Dec.) | Q (Dec.) | I (Hex.) | Q (Hex.) | I (Dec.) | Q (Dec.) | I (Hex.) | Q (Hex.) |
| 201 | 3698 | 29563 | 0E72 | 737B | 1849 | 30593 | 0739 | 7781 | 23557 | 30766 | 5C05 | 782E |
| 202 | 16322 | 13078 | 3FC2 | 3316 | 8161 | 6539 | 1FE1 | 198B | 17638 | 5985 | 44E6 | 1761 |
| 203 | 17429 | 10460 | 4415 | 28DC | 29658 | 5230 | 73DA | 146E | 3545 | 6823 | 0DD9 | 1AA7 |
| 204 | 21730 | 17590 | 54E2 | 44B6 | 10865 | 8795 | 2A71 | 225B | 9299 | 20973 | 2453 | 51ED |
| 205 | 17808 | 20277 | 4590 | 4F35 | 8904 | 27046 | 22C8 | 69A6 | 6323 | 10197 | 18B3 | 27D5 |
| 206 | 30068 | 19988 | 7574 | 4E14 | 15034 | 9994 | 3ABA | 270A | 19590 | 9618 | 4C86 | 2592 |
| 207 | 12737 | 6781 | 31C1 | 1A7D | 18736 | 17154 | 4930 | 4302 | 7075 | 22705 | 1BA3 | 58B1 |
| 208 | 28241 | 32501 | 6E51 | 7EF5 | 26360 | 28998 | 66F8 | 7146 | 14993 | 5234 | 3A91 | 1472 |
| 209 | 20371 | 6024 | 4F93 | 1788 | 30233 | 3012 | 7619 | 0BC4 | 19916 | 12541 | 4DCC | 30FD |
| 210 | 13829 | 20520 | 3605 | 5028 | 19154 | 10260 | 4AD2 | 2814 | 6532 | 8019 | 1984 | 1F53 |
| 211 | 13366 | 31951 | 3436 | 7CCF | 6683 | 28763 | 1A1B | 705B | 17317 | 22568 | 43A5 | 5828 |
| 212 | 25732 | 26063 | 6484 | 65CF | 12866 | 31963 | 3242 | 7CDB | 16562 | 5221 | 40B2 | 1465 |
| 213 | 19864 | 27203 | 4D98 | 6A43 | 9932 | 31517 | 26CC | 7B1D | 26923 | 25216 | 692B | 6280 |
| 214 | 5187 | 6614 | 1443 | 19D6 | 23537 | 3307 | 5BF1 | 0CEB | 9155 | 1354 | 23C3 | 054A |
| 215 | 23219 | 10970 | 5AB3 | 2ADA | 31881 | 5485 | 7C89 | 156D | 20243 | 29335 | 4F13 | 7297 |
| 216 | 28242 | 5511 | 6E52 | 1587 | 14121 | 17663 | 3729 | 44FF | 32391 | 6682 | 7E87 | 1A1A |
| 217 | 6243 | 17119 | 1863 | 42DF | 24033 | 28499 | 5DE1 | 6F53 | 20190 | 26128 | 4EDE | 6610 |
| 218 | 445 | 16064 | 01BD | 3EC0 | 20750 | 8032 | 510E | 1F60 | 27564 | 29390 | 6BAC | 72CE |
| 219 | 21346 | 31614 | 5362 | 7B7E | 10673 | 15807 | 29B1 | 3DBF | 20869 | 8852 | 5185 | 2294 |
| 220 | 13256 | 4660 | 33C8 | 1234 | 6628 | 2330 | 19E4 | 091A | 9791 | 6110 | 263F | 17DE |
| 221 | 18472 | 13881 | 4828 | 3639 | 9236 | 21792 | 2414 | 5520 | 714 | 11847 | 02CA | 2E47 |
| 222 | 25945 | 16819 | 6559 | 41B3 | 25468 | 28389 | 637C | 6EE5 | 7498 | 10239 | 1D4A | 27FF |
| 223 | 31051 | 6371 | 794B | 18E3 | 28021 | 16973 | 6D75 | 424D | 23278 | 6955 | 5AEE | 1B2B |
| 224 | 1093 | 24673 | 0445 | 6061 | 21490 | 32268 | 53F2 | 7E0C | 8358 | 10897 | 20A6 | 2A91 |
| 225 | 5829 | 6055 | 16C5 | 17A7 | 23218 | 17903 | 5AB2 | 45EF | 9468 | 14076 | 24FC | 36FC |
| 226 | 31546 | 10009 | 7B3A | 2719 | 15773 | 23984 | 3D9D | 5DB0 | 23731 | 12450 | 5CB3 | 30A2 |
| 227 | 29833 | 5957 | 7489 | 1745 | 27540 | 17822 | 6B94 | 459E | 25133 | 8954 | 622D | 22FA |
| 228 | 18146 | 11597 | 46E2 | 2D4D | 9073 | 22682 | 2371 | 589A | 2470 | 19709 | 09A6 | 4CFD |
| 229 | 24813 | 22155 | 60ED | 568B | 24998 | 25977 | 61A6 | 6579 | 17501 | 1252 | 445D | 04E4 |
| 230 | 47 | 15050 | 002F | 3ACA | 20935 | 7525 | 51C7 | 1D65 | 24671 | 15142 | 605F | 3B26 |
| 231 | 3202 | 16450 | 0C82 | 4042 | 1601 | 8225 | 0641 | 2021 | 11930 | 26958 | 2E9A | 694E |
| 232 | 21571 | 27899 | 5443 | 6CFB | 31729 | 30785 | 7BF1 | 7841 | 9154 | 8759 | 23C2 | 2237 |
| 233 | 7469 | 2016 | 1D2D | 07E0 | 24390 | 1008 | 5F46 | 03F0 | 7388 | 12696 | 1CDC | 3198 |
| 234 | 25297 | 17153 | 62D1 | 4301 | 24760 | 28604 | 60B8 | 6FBC | 3440 | 11936 | 0D70 | 2EA0 |
| 235 | 8175 | 15849 | 1FEF | 3DE9 | 24103 | 20680 | 5E27 | 50C8 | 27666 | 25635 | 6C12 | 6423 |
| 236 | 28519 | 30581 | 6F67 | 7775 | 26211 | 30086 | 6663 | 7586 | 22888 | 17231 | 5968 | 434F |
| 237 | 4991 | 3600 | 137F | 0E10 | 22639 | 1800 | 586F | 0708 | 13194 | 22298 | 338A | 571A |
| 238 | 7907 | 4097 | 1EE3 | 1001 | 24225 | 17980 | 5EA1 | 463C | 26710 | 7330 | 6856 | 1CA2 |
| 239 | 17728 | 671 | 4540 | 029F | 8864 | 20339 | 22A0 | 4F73 | 7266 | 30758 | 1C62 | 7826 |
| 240 | 14415 | 20774 | 384F | 5126 | 19959 | 10387 | 4DF7 | 2893 | 15175 | 6933 | 3B47 | 1B15 |
| 241 | 30976 | 24471 | 7900 | 5F97 | 15488 | 25079 | 3C80 | 61F7 | 15891 | 2810 | 3E13 | 0AFA |
| 242 | 26376 | 27341 | 6708 | 6ACD | 13188 | 31578 | 3384 | 7B5A | 26692 | 8820 | 6844 | 2274 |
| 243 | 19063 | 19388 | 4A77 | 4BBC | 29931 | 9694 | 74EB | 25DE | 14757 | 7831 | 39A5 | 1E97 |
| 244 | 19160 | 25278 | 4AD8 | 62BE | 9580 | 12639 | 256C | 315F | 28757 | 19584 | 7055 | 4C80 |
| 245 | 3800 | 9505 | 0ED8 | 2521 | 1900 | 23724 | 076C | 5CAC | 31342 | 2944 | 7A6E | 0B80 |
| 246 | 8307 | 26143 | 2073 | 661F | 16873 | 32051 | 41E9 | 7D33 | 19435 | 19854 | 4BEB | 4D8E |
| 247 | 12918 | 13359 | 3276 | 342F | 6459 | 21547 | 193B | 542B | 2437 | 10456 | 0985 | 28D8 |
| 248 | 19642 | 2154 | 4CBA | 086A | 9821 | 1077 | 265D | 0435 | 20573 | 17036 | 505D | 428C |
| 249 | 24873 | 13747 | 6129 | 35B3 | 24900 | 21733 | 6144 | 54E5 | 18781 | 2343 | 495D | 0927 |
| 250 | 22071 | 27646 | 5637 | 6BFE | 31435 | 13823 | 7ACB | 35FF | 18948 | 14820 | 4A04 | 39E4 |

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**Table E-1:** PnMaskI and PnMaskQ Values for PilotPn

| Pilot PN | 14-Chip Delay I (Dec.) | 14-Chip Delay Q (Dec.) | 14-Chip Delay I (Hex.) | 14-Chip Delay Q (Hex.) | 13-Chip Delay I (Dec.) | 13-Chip Delay Q (Dec.) | 13-Chip Delay I (Hex.) | 13-Chip Delay Q (Hex.) | 0-Chip Delay I (Dec.) | 0-Chip Delay Q (Dec.) | 0-Chip Delay I (Hex.) | 0-Chip Delay Q (Hex.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 251 | 13904 | 1056 | 3650 | 0420 | 6952 | 528 | 1B28 | 0210 | 23393 | 1756 | 5B61 | 06DC |
| 252 | 27198 | 1413 | 6A3E | 0585 | 13599 | 19710 | 351F | 4CFE | 5619 | 19068 | 15F3 | 4A7C |
| 253 | 3685 | 3311 | 0E65 | 0CEF | 22242 | 18507 | 56E2 | 484B | 17052 | 28716 | 429C | 702C |
| 254 | 16820 | 4951 | 41B4 | 1357 | 8410 | 18327 | 20DA | 4797 | 21292 | 31958 | 532C | 7CD6 |
| 255 | 22479 | 749 | 57CF | 02ED | 31287 | 20298 | 7A37 | 4F4A | 2868 | 16097 | 0B34 | 3EE1 |
| 256 | 6850 | 6307 | 1AC2 | 18A3 | 3425 | 17005 | 0D61 | 426D | 19538 | 1308 | 4C52 | 051C |
| 257 | 15434 | 961 | 3C4A | 03C1 | 7717 | 20444 | 1E25 | 4FDC | 24294 | 3320 | 5EE6 | 0CF8 |
| 258 | 19332 | 2358 | 4B84 | 0936 | 9666 | 1179 | 25C2 | 049B | 22895 | 16682 | 596F | 412A |
| 259 | 8518 | 28350 | 2146 | 6EBE | 4259 | 14175 | 10A3 | 375F | 27652 | 6388 | 6C04 | 18F4 |
| 260 | 14698 | 31198 | 396A | 79DE | 7349 | 15599 | 1CB5 | 3CEF | 29905 | 12828 | 74D1 | 321C |
| 261 | 21476 | 11467 | 53E4 | 2CCB | 10738 | 22617 | 29F2 | 5859 | 21415 | 3518 | 53A7 | 0DBE |
| 262 | 30475 | 8862 | 770B | 229E | 27221 | 4431 | 6A55 | 114F | 1210 | 3494 | 04BA | 0DA6 |
| 263 | 23984 | 6327 | 5DB0 | 18B7 | 11992 | 16999 | 2ED8 | 4267 | 22396 | 6458 | 577C | 193A |
| 264 | 1912 | 7443 | 0778 | 1D13 | 956 | 16565 | 03BC | 40B5 | 26552 | 10717 | 67B8 | 29DD |
| 265 | 26735 | 28574 | 686F | 6F9E | 26087 | 14287 | 65E7 | 37CF | 24829 | 8463 | 60FD | 210F |
| 266 | 15705 | 25093 | 3D59 | 6205 | 20348 | 32574 | 4F7C | 7F3E | 8663 | 27337 | 21D7 | 6AC9 |
| 267 | 3881 | 6139 | 0F29 | 17FB | 22084 | 17857 | 5644 | 45C1 | 991 | 19846 | 03DF | 4D86 |
| 268 | 20434 | 22047 | 4FD2 | 561F | 10217 | 25907 | 27E9 | 6533 | 21926 | 9388 | 55A6 | 24AC |
| 269 | 16779 | 32545 | 418B | 7F21 | 28949 | 29100 | 7115 | 71AC | 23306 | 21201 | 5B0A | 52D1 |
| 270 | 31413 | 7112 | 7AB5 | 1BC8 | 27786 | 3556 | 6C8A | 0DE4 | 13646 | 31422 | 354E | 7ABE |
| 271 | 16860 | 28535 | 41DC | 6F77 | 8430 | 31111 | 20EE | 7987 | 148 | 166 | 0094 | 00A6 |
| 272 | 8322 | 10378 | 2082 | 288A | 4161 | 5189 | 1041 | 1445 | 24836 | 28622 | 6104 | 6FCE |
| 273 | 28530 | 15065 | 6F72 | 3AD9 | 14265 | 21328 | 37B9 | 5350 | 24202 | 6477 | 5E8A | 194D |
| 274 | 26934 | 5125 | 6936 | 1405 | 13467 | 17470 | 349B | 443E | 9820 | 10704 | 265C | 29D0 |
| 275 | 18806 | 12528 | 4976 | 30F0 | 9403 | 6264 | 24BB | 1878 | 12939 | 25843 | 328B | 64F3 |
| 276 | 20216 | 23215 | 4EF8 | 5AAF | 10108 | 25451 | 277C | 636B | 2364 | 25406 | 093C | 633E |
| 277 | 9245 | 20959 | 241D | 51DF | 17374 | 26323 | 43DE | 66D3 | 14820 | 21523 | 39E4 | 5413 |
| 278 | 8271 | 3568 | 204F | 0DF0 | 16887 | 1784 | 41F7 | 06F8 | 2011 | 8569 | 07DB | 2179 |
| 279 | 18684 | 26453 | 48FC | 6755 | 9342 | 32150 | 247E | 7D96 | 13549 | 9590 | 34ED | 2576 |
| 280 | 8220 | 29421 | 201C | 72ED | 4110 | 30538 | 100E | 774A | 28339 | 22466 | 6EB3 | 57C2 |
| 281 | 6837 | 24555 | 1AB5 | 5FEB | 23690 | 25033 | 5C8A | 61C9 | 25759 | 12455 | 649F | 30A7 |
| 282 | 9613 | 10779 | 258D | 2A1B | 17174 | 23345 | 4316 | 5B31 | 11116 | 27506 | 2B6C | 6B72 |
| 283 | 31632 | 25260 | 7B90 | 62AC | 15816 | 12630 | 3DC8 | 3156 | 31448 | 21847 | 7AD8 | 5557 |
| 284 | 27448 | 16084 | 6B38 | 3ED4 | 13724 | 8042 | 359C | 1F6A | 27936 | 28392 | 6D20 | 6EE8 |
| 285 | 12417 | 26028 | 3081 | 65AC | 18832 | 13014 | 4990 | 32D6 | 3578 | 1969 | 0DFA | 07B1 |
| 286 | 30901 | 29852 | 78B5 | 749C | 28042 | 14926 | 6D8A | 3A4E | 12371 | 30715 | 3053 | 77FB |
| 287 | 9366 | 14978 | 2496 | 3A82 | 4683 | 7489 | 124B | 1D41 | 12721 | 23674 | 31B1 | 5C7A |
| 288 | 12225 | 12182 | 2FC1 | 2F96 | 17968 | 6091 | 4630 | 17CB | 10264 | 22629 | 2818 | 5865 |
| 289 | 21458 | 25143 | 53D2 | 6237 | 10729 | 32551 | 29E9 | 7F27 | 25344 | 12857 | 6300 | 3239 |
| 290 | 6466 | 15838 | 1942 | 3DDE | 3233 | 7919 | 0CA1 | 1EEF | 13246 | 30182 | 33BE | 75E6 |
| 291 | 8999 | 5336 | 2327 | 14D8 | 16451 | 2668 | 4043 | 0A6C | 544 | 21880 | 0220 | 5578 |
| 292 | 26718 | 21885 | 685E | 557D | 13359 | 25730 | 342F | 6482 | 9914 | 6617 | 26BA | 19D9 |
| 293 | 3230 | 20561 | 0C9E | 5051 | 1615 | 26132 | 064F | 6614 | 4601 | 27707 | 11F9 | 6C3B |
| 294 | 27961 | 30097 | 6D39 | 7591 | 26444 | 29940 | 674C | 74F4 | 16234 | 16249 | 3F6A | 3F79 |
| 295 | 28465 | 21877 | 6F31 | 5575 | 26184 | 25734 | 6648 | 6486 | 24475 | 24754 | 5F9B | 60B2 |
| 296 | 6791 | 23589 | 1A87 | 5C25 | 23699 | 24622 | 5C93 | 602E | 26318 | 31609 | 66CE | 7B79 |
| 297 | 17338 | 26060 | 43BA | 65CC | 8669 | 13030 | 21DD | 32E6 | 6224 | 22689 | 1850 | 58A1 |
| 298 | 11832 | 9964 | 2E38 | 26EC | 5916 | 4982 | 171C | 1376 | 13381 | 3226 | 3445 | 0C9A |
| 299 | 11407 | 25959 | 2C8F | 6567 | 18327 | 31887 | 4797 | 7C8F | 30013 | 4167 | 753D | 1047 |
| 300 | 15553 | 3294 | 3CC1 | 0CDE | 20400 | 1647 | 4FB0 | 066F | 22195 | 25624 | 56B3 | 6418 |

. . . continued on next page

**Table E-1:** PnMaskI and PnMaskQ Values for PilotPn

| Pilot PN | 14-Chip Delay I (Dec.) | 14-Chip Delay Q (Dec.) | 14-Chip Delay I (Hex.) | 14-Chip Delay Q (Hex.) | 13-Chip Delay I (Dec.) | 13-Chip Delay Q (Dec.) | 13-Chip Delay I (Hex.) | 13-Chip Delay Q (Hex.) | 0-Chip Delay I (Dec.) | 0-Chip Delay Q (Dec.) | 0-Chip Delay I (Hex.) | 0-Chip Delay Q (Hex.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 301 | 17418 | 30173 | 440A | 75DD | 8709 | 29906 | 2205 | 74D2 | 30380 | 10924 | 76AC | 2AAC |
| 302 | 14952 | 15515 | 3A68 | 3C9B | 7476 | 20593 | 1D34 | 5071 | 15337 | 23096 | 3BE9 | 5A38 |
| 303 | 52 | 5371 | 0034 | 14FB | 26 | 17473 | 001A | 4441 | 10716 | 22683 | 29DC | 589B |
| 304 | 27254 | 10242 | 6A76 | 2802 | 13627 | 5121 | 353B | 1401 | 13592 | 10955 | 3518 | 2ACB |
| 305 | 15064 | 28052 | 3AD8 | 6D94 | 7532 | 14026 | 1D6C | 36CA | 2412 | 17117 | 096C | 42DD |
| 306 | 10942 | 14714 | 2ABE | 397A | 5471 | 7357 | 155F | 1CBD | 15453 | 15837 | 3C5D | 3DDD |
| 307 | 377 | 19550 | 0179 | 4C5E | 20844 | 9775 | 516C | 262F | 13810 | 22647 | 35F2 | 5877 |
| 308 | 14303 | 8866 | 37DF | 22A2 | 19007 | 4433 | 4A3F | 1151 | 12956 | 10700 | 329C | 29CC |
| 309 | 24427 | 15297 | 5F6B | 3BC1 | 32357 | 21468 | 7E65 | 53DC | 30538 | 30293 | 774A | 7655 |
| 310 | 26629 | 10898 | 6805 | 2A92 | 26066 | 5449 | 65D2 | 1549 | 10814 | 5579 | 2A3E | 15CB |
| 311 | 20011 | 31315 | 4E2B | 7A53 | 30405 | 29461 | 76C5 | 7315 | 18939 | 11057 | 49FB | 2B31 |
| 312 | 16086 | 19475 | 3ED6 | 4C13 | 8043 | 26677 | 1F6B | 6835 | 19767 | 30238 | 4D37 | 761E |
| 313 | 24374 | 1278 | 5F36 | 04FE | 12187 | 639 | 2F9B | 027F | 20547 | 14000 | 5043 | 36B0 |
| 314 | 9969 | 11431 | 26F1 | 2CA7 | 17064 | 22639 | 42A8 | 586F | 29720 | 22860 | 7418 | 594C |
| 315 | 29364 | 31392 | 72B4 | 7AA0 | 14682 | 15696 | 395A | 3D50 | 31831 | 27172 | 7C57 | 6A24 |
| 316 | 25560 | 4381 | 63D8 | 111D | 12780 | 18098 | 31EC | 46B2 | 26287 | 307 | 66AF | 0133 |
| 317 | 28281 | 14898 | 6E79 | 3A32 | 26348 | 7449 | 66EC | 1D19 | 11310 | 20380 | 2C2E | 4F9C |
| 318 | 7327 | 23959 | 1C9F | 5D97 | 24479 | 24823 | 5F9F | 60F7 | 25724 | 26427 | 647C | 673B |
| 319 | 32449 | 16091 | 7EC1 | 3EDB | 28336 | 20817 | 6EB0 | 5151 | 21423 | 10702 | 53AF | 29CE |
| 320 | 26334 | 9037 | 66DE | 234D | 13167 | 24474 | 336F | 5F9A | 5190 | 30024 | 1446 | 7548 |
| 321 | 14760 | 24162 | 39A8 | 5E62 | 7380 | 12081 | 1CD4 | 2F31 | 258 | 14018 | 0102 | 36C2 |
| 322 | 15128 | 6383 | 3B18 | 18EF | 7564 | 16971 | 1D8C | 424B | 13978 | 4297 | 369A | 10C9 |
| 323 | 29912 | 27183 | 74D8 | 6A2F | 14956 | 31531 | 3A6C | 7B2B | 4670 | 13938 | 123E | 3672 |
| 324 | 4244 | 16872 | 1094 | 41E8 | 2122 | 8436 | 084A | 20F4 | 23496 | 25288 | 5BC8 | 62C8 |
| 325 | 8499 | 9072 | 2133 | 2370 | 16713 | 4536 | 4149 | 11B8 | 23986 | 27294 | 5DB2 | 6A9E |
| 326 | 9362 | 12966 | 2492 | 32A6 | 4681 | 6483 | 1249 | 1953 | 839 | 31835 | 0347 | 7C5B |
| 327 | 10175 | 28886 | 27BF | 70D6 | 16911 | 14443 | 420F | 386B | 11296 | 8228 | 2C20 | 2024 |
| 328 | 30957 | 25118 | 78ED | 621E | 28070 | 12559 | 6DA6 | 310F | 30913 | 12745 | 78C1 | 31C9 |
| 329 | 12755 | 20424 | 31D3 | 4FC8 | 18745 | 10212 | 4939 | 27E4 | 27297 | 6746 | 6AA1 | 1A5A |
| 330 | 19350 | 6729 | 4B96 | 1A49 | 9675 | 17176 | 25CB | 4318 | 10349 | 1456 | 286D | 05B0 |
| 331 | 1153 | 20983 | 0481 | 51F7 | 21392 | 26311 | 5390 | 66C7 | 32504 | 27743 | 7EF8 | 6C5F |
| 332 | 29304 | 12372 | 7278 | 3054 | 14652 | 6186 | 393C | 182A | 18405 | 27443 | 47E5 | 6B33 |
| 333 | 6041 | 13948 | 1799 | 367C | 23068 | 6974 | 5A1C | 1B3E | 3526 | 31045 | 0DC6 | 7945 |
| 334 | 21668 | 27547 | 54A4 | 6B9B | 10834 | 31729 | 2A52 | 7BF1 | 19161 | 12225 | 4AD9 | 2FC1 |
| 335 | 28048 | 8152 | 6D90 | 1FD8 | 14024 | 4076 | 36C8 | 0FEC | 23831 | 21482 | 5D17 | 53EA |
| 336 | 10096 | 17354 | 2770 | 43CA | 5048 | 8677 | 13B8 | 21E5 | 21380 | 14678 | 5384 | 3956 |
| 337 | 23388 | 17835 | 5B5C | 45AB | 11694 | 27881 | 2DAE | 6CE9 | 4282 | 30656 | 10BA | 77C0 |
| 338 | 15542 | 14378 | 3CB6 | 382A | 7771 | 7189 | 1E5B | 1C15 | 32382 | 13721 | 7E7E | 3599 |
| 339 | 24013 | 7453 | 5DCD | 1D1D | 32566 | 16562 | 7F36 | 40B2 | 806 | 21831 | 0326 | 5547 |
| 340 | 2684 | 26317 | 0A7C | 66CD | 1342 | 32090 | 053E | 7D5A | 6238 | 30208 | 185E | 7600 |
| 341 | 19018 | 5955 | 4A4A | 1743 | 9509 | 17821 | 2525 | 459D | 10488 | 9995 | 28F8 | 270B |
| 342 | 25501 | 10346 | 639D | 286A | 24606 | 5173 | 601E | 1435 | 19507 | 3248 | 4C33 | 0CB0 |
| 343 | 4489 | 13200 | 1189 | 3390 | 22804 | 6600 | 5914 | 19C8 | 27288 | 12030 | 6A98 | 2EFE |
| 344 | 31011 | 30402 | 7923 | 76C2 | 27969 | 15201 | 6D41 | 3B61 | 2390 | 5688 | 0956 | 1638 |
| 345 | 29448 | 7311 | 7308 | 1C8F | 14724 | 16507 | 3984 | 407B | 19094 | 2082 | 4A96 | 0822 |
| 346 | 25461 | 3082 | 6375 | 0C0A | 24682 | 1541 | 606A | 0605 | 13860 | 23143 | 3624 | 5A67 |
| 347 | 11846 | 21398 | 2E46 | 5396 | 5923 | 10699 | 1723 | 29CB | 9225 | 25906 | 2409 | 6532 |
| 348 | 30331 | 31104 | 767B | 7980 | 27373 | 15552 | 6AED | 3CC0 | 2505 | 15902 | 09C9 | 3E1E |
| 349 | 10588 | 24272 | 295C | 5ED0 | 5294 | 12136 | 14AE | 2F68 | 27806 | 21084 | 6C9E | 525C |
| 350 | 32154 | 27123 | 7D9A | 69F3 | 16077 | 31429 | 3ECD | 7AC5 | 2408 | 25723 | 0968 | 647B |

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E

**Table E-1:** PnMaskI and PnMaskQ Values for PilotPn

| Pilot PN | 14-Chip Delay | | | | 13-Chip Delay | | | | 0-Chip Delay | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | I (Dec.) | Q (Dec.) | I (Hex.) | Q (Hex.) | I (Dec.) | Q (Dec.) | I (Hex.) | Q (Hex.) | I (Dec.) | Q (Dec.) | I (Hex.) | Q (Hex.) |
| 351 | 29572 | 5578 | 7384 | 15CA | 14786 | 2789 | 39C2 | 0AE5 | 13347 | 13427 | 3423 | 3473 |
| 352 | 13173 | 25731 | 3375 | 6483 | 18538 | 31869 | 486A | 7C7D | 7885 | 31084 | 1ECD | 796C |
| 353 | 10735 | 10662 | 29EF | 29A6 | 17703 | 5331 | 4527 | 14D3 | 6669 | 24023 | 1A0D | 5DD7 |
| 354 | 224 | 11084 | 00E0 | 2B4C | 112 | 5542 | 0070 | 15A6 | 8187 | 23931 | 1FFB | 5D7B |
| 355 | 12083 | 31098 | 2F33 | 797A | 17993 | 15549 | 4649 | 3CBD | 18145 | 15836 | 46E1 | 3DDC |
| 356 | 22822 | 16408 | 5926 | 4018 | 11411 | 8204 | 2C93 | 200C | 14109 | 6085 | 371D | 17C5 |
| 357 | 2934 | 6362 | 0B76 | 18DA | 1467 | 3181 | 05BB | 0C6D | 14231 | 30324 | 3797 | 7674 |
| 358 | 27692 | 2719 | 6C2C | 0A9F | 13846 | 19315 | 3616 | 4B73 | 27606 | 27561 | 6BD6 | 6BA9 |
| 359 | 10205 | 14732 | 27DD | 398C | 16958 | 7366 | 423E | 1CC6 | 783 | 13821 | 030F | 35FD |
| 360 | 7011 | 22744 | 1B63 | 58D8 | 23649 | 11372 | 5C61 | 2C6C | 6301 | 269 | 189D | 010D |
| 361 | 22098 | 1476 | 5652 | 05C4 | 11049 | 738 | 2B29 | 02E2 | 5067 | 28663 | 13CB | 6FF7 |
| 362 | 2640 | 8445 | 0A50 | 20FD | 1320 | 24130 | 0528 | 5E42 | 15383 | 29619 | 3C17 | 73B3 |
| 363 | 4408 | 21118 | 1138 | 527E | 2204 | 10559 | 089C | 293F | 1392 | 2043 | 0570 | 07FB |
| 364 | 102 | 22198 | 0066 | 56B6 | 51 | 11099 | 0033 | 2B5B | 7641 | 6962 | 1DD9 | 1B32 |
| 365 | 27632 | 22030 | 6BF0 | 560E | 13816 | 11015 | 35F8 | 2B07 | 25700 | 29119 | 6464 | 71BF |
| 366 | 19646 | 10363 | 4CBE | 287B | 9823 | 23041 | 265F | 5A01 | 25259 | 22947 | 62AB | 59A3 |
| 367 | 26967 | 25802 | 6957 | 64CA | 25979 | 12901 | 657B | 3265 | 19813 | 9612 | 4D65 | 258C |
| 368 | 32008 | 2496 | 7D08 | 09C0 | 16004 | 1248 | 3E84 | 04E0 | 20933 | 18698 | 51C5 | 490A |
| 369 | 7873 | 31288 | 1EC1 | 7A38 | 24240 | 15644 | 5EB0 | 3D1C | 638 | 16782 | 027E | 418E |
| 370 | 655 | 24248 | 028F | 5EB8 | 20631 | 12124 | 5097 | 2F5C | 16318 | 29735 | 3FBE | 7427 |
| 371 | 25274 | 14327 | 62BA | 37F7 | 12637 | 21959 | 315D | 55C7 | 6878 | 2136 | 1ADE | 0858 |
| 372 | 16210 | 23154 | 3F52 | 5A72 | 8105 | 11577 | 1FA9 | 2D39 | 1328 | 8086 | 0530 | 1F96 |
| 373 | 11631 | 13394 | 2D6F | 3452 | 18279 | 6697 | 4767 | 1A29 | 14744 | 10553 | 3998 | 2939 |
| 374 | 8535 | 1806 | 2157 | 070E | 16763 | 903 | 417B | 0387 | 22800 | 11900 | 5910 | 2E7C |
| 375 | 19293 | 17179 | 4B5D | 431B | 29822 | 28593 | 747E | 6FB1 | 25919 | 19996 | 653F | 4E1C |
| 376 | 12110 | 10856 | 2F4E | 2A68 | 6055 | 5428 | 17A7 | 1534 | 4795 | 5641 | 12BB | 1609 |
| 377 | 21538 | 25755 | 5422 | 649B | 10769 | 31857 | 2A11 | 7C71 | 18683 | 28328 | 48FB | 6EA8 |
| 378 | 10579 | 15674 | 2953 | 3D3A | 17785 | 7837 | 4579 | 1E9D | 32658 | 25617 | 7F92 | 6411 |
| 379 | 13032 | 7083 | 32E8 | 1BAB | 6516 | 17385 | 1974 | 43E9 | 1586 | 26986 | 0632 | 696A |
| 380 | 14717 | 29096 | 397D | 71A8 | 19822 | 14548 | 4D6E | 38D4 | 27208 | 5597 | 6A48 | 15DD |
| 381 | 11666 | 3038 | 2D92 | 0BDE | 5833 | 1519 | 16C9 | 05EF | 17517 | 14078 | 446D | 36FE |
| 382 | 25809 | 16277 | 64D1 | 3F95 | 25528 | 20982 | 63B8 | 51F6 | 599 | 13247 | 0257 | 33BF |
| 383 | 5008 | 25525 | 1390 | 63B5 | 2504 | 32742 | 09C8 | 7FE6 | 16253 | 499 | 3F7D | 01F3 |
| 384 | 32418 | 20465 | 7EA2 | 4FF1 | 16209 | 27076 | 3F51 | 69C4 | 8685 | 30469 | 21ED | 7705 |
| 385 | 22175 | 28855 | 569F | 70B7 | 31391 | 30311 | 7A9F | 7667 | 29972 | 17544 | 7514 | 4488 |
| 386 | 11742 | 32732 | 2DDE | 7FDC | 5871 | 16366 | 16EF | 3FEE | 22128 | 28510 | 5670 | 6F5E |
| 387 | 22546 | 20373 | 5812 | 4F95 | 11273 | 27126 | 2C09 | 69F6 | 19871 | 23196 | 4D9F | 5A9C |
| 388 | 21413 | 9469 | 53A5 | 24FD | 30722 | 23618 | 7802 | 5C42 | 19405 | 13384 | 4BCD | 3448 |
| 389 | 133 | 26155 | 0085 | 662B | 20882 | 32041 | 5192 | 7D29 | 17972 | 4239 | 4634 | 108F |
| 390 | 4915 | 6957 | 1333 | 1B2D | 22601 | 17322 | 5849 | 43AA | 8599 | 20725 | 2197 | 50F5 |
| 391 | 8736 | 12214 | 2220 | 2FB6 | 4368 | 6107 | 1110 | 17DB | 10142 | 6466 | 279E | 1942 |
| 392 | 1397 | 21479 | 0575 | 53E7 | 21354 | 26575 | 536A | 67CF | 26834 | 28465 | 68D2 | 6F31 |
| 393 | 18024 | 31914 | 4668 | 7CAA | 9012 | 15957 | 2334 | 3E55 | 23710 | 19981 | 5C9E | 4E0D |
| 394 | 15532 | 32311 | 3CAC | 7E37 | 7766 | 28967 | 1E56 | 7127 | 27280 | 16723 | 6A90 | 4153 |
| 395 | 26870 | 11276 | 68F6 | 2C0C | 13435 | 5638 | 347B | 1606 | 6570 | 4522 | 19AA | 11AA |
| 396 | 5904 | 20626 | 1710 | 5092 | 2952 | 10313 | 0B88 | 2849 | 7400 | 678 | 1CE8 | 02A6 |
| 397 | 24341 | 423 | 5F15 | 01A7 | 32346 | 20207 | 7E5A | 4EEF | 26374 | 15320 | 6706 | 3BD8 |
| 398 | 13041 | 2679 | 32F1 | 0A77 | 18600 | 19207 | 48A8 | 4B07 | 22218 | 29116 | 56CA | 71BC |
| 399 | 23478 | 15537 | 5BB6 | 3CB1 | 11739 | 20580 | 2DDB | 5064 | 29654 | 5388 | 73D6 | 150C |
| 400 | 1862 | 10818 | 0746 | 2A42 | 931 | 5409 | 03A3 | 1521 | 13043 | 22845 | 32F3 | 593D |

. . . continued on next page

E

**Table E-1:** PnMaskI and PnMaskQ Values for PilotPn

| Pilot PN | 14-Chip Delay | | | | 13-Chip Delay | | | | 0-Chip Delay | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | I (Dec.) | Q (Dec.) | I (Hex.) | Q (Hex.) | I (Dec.) | Q (Dec.) | I (Hex.) | Q (Hex.) | I (Dec.) | Q (Dec.) | I (Hex.) | Q (Hex.) |
| 401 | 5850 | 23074 | 16DA | 5A22 | 2925 | 11537 | 0B6D | 2D11 | 24457 | 28430 | 5F89 | 6F0E |
| 402 | 5552 | 20250 | 15B0 | 4F1A | 2776 | 10125 | 0AD8 | 278D | 17161 | 8660 | 4309 | 21D4 |
| 403 | 12589 | 14629 | 312D | 3925 | 18758 | 21166 | 4946 | 52AE | 21314 | 2659 | 5342 | 0A63 |
| 404 | 23008 | 29175 | 59E0 | 71F7 | 11504 | 30407 | 2CF0 | 76C7 | 28728 | 8803 | 7038 | 2263 |
| 405 | 27636 | 13943 | 6BF4 | 3677 | 13818 | 21767 | 35FA | 5507 | 22162 | 19690 | 5692 | 4CEA |
| 406 | 17600 | 11072 | 44C0 | 2B40 | 8800 | 5536 | 2260 | 15A0 | 26259 | 22169 | 6693 | 5699 |
| 407 | 17000 | 29492 | 4268 | 7334 | 8500 | 14746 | 2134 | 399A | 22180 | 8511 | 56A4 | 213F |
| 408 | 21913 | 5719 | 5599 | 1657 | 31516 | 17687 | 7B1C | 4517 | 2266 | 17393 | 08DA | 43F1 |
| 409 | 30320 | 7347 | 7670 | 1CB3 | 15160 | 16485 | 3B38 | 4065 | 10291 | 11336 | 2833 | 2C48 |
| 410 | 28240 | 12156 | 6E50 | 2F7C | 14120 | 6078 | 3728 | 17BE | 26620 | 13576 | 67FC | 3508 |
| 411 | 7260 | 25623 | 1C5C | 6417 | 3630 | 31799 | 0E2E | 7C37 | 19650 | 22820 | 4CC2 | 5924 |
| 412 | 17906 | 27725 | 45F2 | 6C4D | 8953 | 30746 | 22F9 | 781A | 14236 | 13344 | 379C | 3420 |
| 413 | 5882 | 28870 | 16FA | 70C6 | 2941 | 14435 | 0B7D | 3863 | 11482 | 20107 | 2CDA | 4E8B |
| 414 | 22080 | 31478 | 5640 | 7AF6 | 11040 | 15739 | 2B20 | 3D7B | 25289 | 8013 | 62C9 | 1F4D |
| 415 | 12183 | 28530 | 2F97 | 6F72 | 17947 | 14265 | 461B | 37B9 | 12011 | 18835 | 2EEB | 4993 |
| 416 | 23082 | 24834 | 5A2A | 6102 | 11541 | 12417 | 2D15 | 3081 | 13892 | 16793 | 3644 | 4199 |
| 417 | 17435 | 9075 | 441B | 2373 | 29661 | 24453 | 73DD | 5F85 | 17336 | 9818 | 43B8 | 265A |
| 418 | 18527 | 32265 | 485F | 7E09 | 30207 | 28984 | 75FF | 7138 | 10759 | 4673 | 2A07 | 1241 |
| 419 | 31902 | 3175 | 7C9E | 0C67 | 15951 | 18447 | 3E4F | 480F | 26816 | 13609 | 68C0 | 3529 |
| 420 | 18783 | 17434 | 495F | 441A | 30079 | 8717 | 757F | 220D | 31065 | 10054 | 7959 | 2746 |
| 421 | 20027 | 12178 | 4E3B | 2F92 | 30413 | 6089 | 76CD | 17C9 | 8578 | 10988 | 2182 | 2AEC |
| 422 | 7982 | 25613 | 1F2E | 640D | 3991 | 31802 | 0F97 | 7C3A | 24023 | 14744 | 5DD7 | 3998 |
| 423 | 20587 | 31692 | 506B | 7BCC | 31205 | 15846 | 79E5 | 3DE6 | 16199 | 17930 | 3F47 | 460A |
| 424 | 10004 | 25384 | 2714 | 6328 | 5002 | 12692 | 138A | 3194 | 22310 | 25452 | 5726 | 636C |
| 425 | 13459 | 18908 | 3493 | 49DC | 19353 | 9454 | 4B99 | 24EE | 30402 | 11334 | 76C2 | 2C46 |
| 426 | 13383 | 25816 | 3447 | 64D8 | 19443 | 12908 | 4BF3 | 326C | 16613 | 15451 | 40E5 | 3C5B |
| 427 | 28930 | 4661 | 7102 | 1235 | 14465 | 18214 | 3881 | 4726 | 13084 | 11362 | 331C | 2C62 |
| 428 | 4860 | 31115 | 12FC | 798B | 2430 | 29433 | 097E | 72F9 | 3437 | 2993 | 0D6D | 0BB1 |
| 429 | 13108 | 7691 | 3334 | 1E0B | 6554 | 16697 | 199A | 4139 | 1703 | 11012 | 06A7 | 2B04 |
| 430 | 24161 | 1311 | 5E61 | 051F | 32480 | 19635 | 7EE0 | 4CB3 | 22659 | 5806 | 5883 | 16AE |
| 431 | 20067 | 16471 | 4E63 | 4057 | 30433 | 28183 | 76E1 | 6E17 | 26896 | 20180 | 6910 | 4ED4 |
| 432 | 2667 | 15771 | 0A6B | 3D9B | 21733 | 20721 | 54E5 | 50F1 | 1735 | 8932 | 06C7 | 22E4 |
| 433 | 13372 | 16112 | 343C | 3EF0 | 6686 | 8056 | 1A1E | 1F78 | 16178 | 23878 | 3F32 | 5D46 |
| 434 | 28743 | 21062 | 7047 | 5246 | 27123 | 10531 | 69F3 | 2923 | 19166 | 20760 | 4ADE | 5118 |
| 435 | 24489 | 29690 | 5FA9 | 73FA | 32260 | 14845 | 7E04 | 39FD | 665 | 32764 | 0299 | 7FFC |
| 436 | 249 | 10141 | 00F9 | 279D | 20908 | 24050 | 51AC | 5DF2 | 20227 | 32325 | 4F03 | 7E45 |
| 437 | 19960 | 19014 | 4DF8 | 4A46 | 9980 | 9507 | 26FC | 2523 | 24447 | 25993 | 5F7F | 6589 |
| 438 | 29682 | 22141 | 73F2 | 567D | 14841 | 25858 | 39F9 | 6502 | 16771 | 3268 | 4183 | 0CC4 |
| 439 | 31101 | 11852 | 797D | 2E4C | 28014 | 5926 | 6D6E | 1726 | 27209 | 25180 | 6A49 | 625C |
| 440 | 27148 | 26404 | 6A0C | 6724 | 13574 | 13202 | 3506 | 3392 | 6050 | 12149 | 17A2 | 2F75 |
| 441 | 26706 | 30663 | 6852 | 77C7 | 13353 | 30175 | 3429 | 75DF | 29088 | 10193 | 71A0 | 27D1 |
| 442 | 5148 | 32524 | 141C | 7F0C | 2574 | 16262 | 0A0E | 3F86 | 7601 | 9128 | 1DB1 | 23A8 |
| 443 | 4216 | 28644 | 1078 | 6FE4 | 2108 | 14322 | 083C | 37F2 | 4905 | 7843 | 1329 | 1EA3 |
| 444 | 5762 | 10228 | 1682 | 27F4 | 2881 | 5114 | 0B41 | 13FA | 5915 | 25474 | 171B | 6382 |
| 445 | 245 | 23536 | 00F5 | 5BF0 | 20906 | 11768 | 51AA | 2DF8 | 6169 | 11356 | 1819 | 2C5C |
| 446 | 21882 | 18045 | 557A | 467D | 10941 | 27906 | 2ABD | 6D02 | 21303 | 11226 | 5337 | 2BDA |
| 447 | 3763 | 25441 | 0EB3 | 6361 | 22153 | 32652 | 5689 | 7F8C | 28096 | 16268 | 6DC0 | 3F8C |
| 448 | 206 | 27066 | 00CE | 69BA | 103 | 13533 | 0067 | 34DD | 8905 | 14491 | 22C9 | 389B |
| 449 | 28798 | 13740 | 707E | 35AC | 14399 | 6870 | 383F | 1AD6 | 26997 | 8366 | 6975 | 20AE |
| 450 | 32402 | 13815 | 7E92 | 35F7 | 16201 | 21703 | 3F49 | 54C7 | 15047 | 26009 | 3AC7 | 6599 |

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E

**Table E-1:** PnMaskI and PnMaskQ Values for PilotPn

| Pilot PN | 14-Chip Delay I (Dec.) | 14-Chip Delay Q (Dec.) | 14-Chip Delay I (Hex.) | 14-Chip Delay Q (Hex.) | 13-Chip Delay I (Dec.) | 13-Chip Delay Q (Dec.) | 13-Chip Delay I (Hex.) | 13-Chip Delay Q (Hex.) | 0-Chip Delay I (Dec.) | 0-Chip Delay Q (Dec.) | 0-Chip Delay I (Hex.) | 0-Chip Delay Q (Hex.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 451 | 13463 | 3684 | 3497 | 0E64 | 19355 | 1842 | 4B9B | 0732 | 17460 | 5164 | 4434 | 142C |
| 452 | 15417 | 23715 | 3C39 | 5CA3 | 20428 | 24685 | 4FCC | 606D | 17629 | 17126 | 44DD | 42E6 |
| 453 | 23101 | 15314 | 5A3D | 3BD2 | 31950 | 7657 | 7CCE | 1DE9 | 10461 | 21566 | 28DD | 543E |
| 454 | 14957 | 32469 | 3A6D | 7ED5 | 19686 | 29014 | 4CE6 | 7156 | 21618 | 21845 | 5472 | 5555 |
| 455 | 23429 | 9816 | 5B85 | 2658 | 31762 | 4908 | 7C12 | 132C | 11498 | 28149 | 2CEA | 6DF5 |
| 456 | 12990 | 4444 | 32BE | 115C | 6495 | 2222 | 195F | 08AE | 193 | 9400 | 00C1 | 24B8 |
| 457 | 12421 | 5664 | 3085 | 1620 | 18834 | 2832 | 4992 | 0B10 | 16140 | 19459 | 3F0C | 4C03 |
| 458 | 28875 | 7358 | 70CB | 1CBE | 27061 | 3679 | 69B5 | 0E5F | 13419 | 7190 | 346B | 1C16 |
| 459 | 4009 | 27264 | 0FA9 | 6A80 | 22020 | 13632 | 5604 | 3540 | 10864 | 3101 | 2A70 | 0C1D |
| 460 | 1872 | 28128 | 0750 | 6DE0 | 936 | 14064 | 03A8 | 36F0 | 28935 | 491 | 7107 | 01EB |
| 461 | 15203 | 30168 | 3B63 | 75D8 | 19553 | 15084 | 4C61 | 3AEC | 18765 | 25497 | 494D | 6399 |
| 462 | 30109 | 29971 | 759D | 7513 | 27422 | 29877 | 6B1E | 74B5 | 27644 | 29807 | 6BFC | 746F |
| 463 | 24001 | 3409 | 5DC1 | 0D51 | 32560 | 18580 | 7F30 | 4894 | 21564 | 26508 | 543C | 678C |
| 464 | 4862 | 16910 | 12FE | 420E | 2431 | 8455 | 097F | 2107 | 5142 | 4442 | 1416 | 115A |
| 465 | 14091 | 20739 | 370B | 5103 | 19029 | 26301 | 4A55 | 66BD | 1211 | 4871 | 04BB | 1307 |
| 466 | 6702 | 10191 | 1A2E | 27CF | 3351 | 24027 | 0D17 | 5DDB | 1203 | 31141 | 04B3 | 79A5 |
| 467 | 3067 | 12819 | 0BFB | 3213 | 21549 | 22325 | 542D | 5735 | 5199 | 9864 | 144F | 2688 |
| 468 | 28643 | 19295 | 6FE3 | 4B5F | 26145 | 27539 | 6621 | 6B93 | 16945 | 12589 | 4231 | 312D |
| 469 | 21379 | 10072 | 5383 | 2758 | 30737 | 5036 | 7811 | 13AC | 4883 | 5417 | 1313 | 1529 |
| 470 | 20276 | 15191 | 4F34 | 3B57 | 10138 | 21399 | 279A | 5397 | 25040 | 8549 | 61D0 | 2165 |
| 471 | 25337 | 27748 | 62F9 | 6C64 | 24748 | 13874 | 60AC | 3632 | 7119 | 14288 | 1BCF | 37D0 |
| 472 | 19683 | 720 | 4CE3 | 02D0 | 30625 | 360 | 77A1 | 0168 | 17826 | 8503 | 45A2 | 2137 |
| 473 | 10147 | 29799 | 27A3 | 7467 | 16897 | 29711 | 4201 | 740F | 4931 | 20357 | 1343 | 4F85 |
| 474 | 16791 | 27640 | 4197 | 6BF8 | 28955 | 13820 | 711B | 35FC | 25705 | 15381 | 6469 | 3C15 |
| 475 | 17359 | 263 | 43CF | 0107 | 28727 | 20159 | 7037 | 4EBF | 10726 | 18065 | 29E6 | 4691 |
| 476 | 13248 | 24734 | 33C0 | 609E | 6624 | 12367 | 19E0 | 304F | 17363 | 24678 | 43D3 | 6066 |
| 477 | 22740 | 16615 | 58D4 | 40E7 | 11370 | 28239 | 2C6A | 6E4F | 2746 | 23858 | 0ABA | 5D32 |
| 478 | 13095 | 20378 | 3327 | 4F9A | 18499 | 10189 | 4843 | 27CD | 10952 | 7610 | 2AC8 | 1DBA |
| 479 | 10345 | 25116 | 2869 | 621C | 17892 | 12558 | 45E4 | 310E | 19313 | 18097 | 4B71 | 46B1 |
| 480 | 30342 | 19669 | 7686 | 4CD5 | 15171 | 26710 | 3B43 | 6856 | 29756 | 20918 | 743C | 51B6 |
| 481 | 27866 | 14656 | 6CDA | 3940 | 13933 | 7328 | 366D | 1CA0 | 14297 | 7238 | 37D9 | 1C46 |
| 482 | 9559 | 27151 | 2557 | 6A0F | 17275 | 31547 | 437B | 7B3B | 21290 | 30549 | 532A | 7755 |
| 483 | 8808 | 28728 | 2268 | 7038 | 4404 | 14364 | 1134 | 381C | 1909 | 16320 | 0775 | 3FC0 |
| 484 | 12744 | 25092 | 31C8 | 6204 | 6372 | 12546 | 18E4 | 3102 | 8994 | 20853 | 2322 | 5175 |
| 485 | 11618 | 22601 | 2D62 | 5849 | 5809 | 25112 | 16B1 | 6218 | 13295 | 26736 | 33EF | 6870 |
| 486 | 27162 | 2471 | 6A1A | 09A7 | 13581 | 19183 | 350D | 4AEF | 21590 | 10327 | 5456 | 2857 |
| 487 | 17899 | 25309 | 45EB | 62DD | 29477 | 32594 | 7325 | 7F52 | 26468 | 24404 | 6764 | 5F54 |
| 488 | 29745 | 15358 | 7431 | 3BFE | 27592 | 7679 | 6BC8 | 1DFF | 13636 | 7931 | 3544 | 1EFB |
| 489 | 31892 | 17739 | 7C94 | 454B | 15946 | 27801 | 3E4A | 6C99 | 5207 | 5310 | 1457 | 14BE |
| 490 | 23964 | 12643 | 5D9C | 3163 | 11982 | 22157 | 2ECE | 568D | 29493 | 554 | 7335 | 022A |
| 491 | 23562 | 32730 | 5C0A | 7FDA | 11781 | 16365 | 2E05 | 3FED | 18992 | 27311 | 4A30 | 6AAF |
| 492 | 2964 | 19122 | 0B94 | 4AB2 | 1482 | 9561 | 05CA | 2559 | 12567 | 6865 | 3117 | 1AD1 |
| 493 | 18208 | 16870 | 4720 | 41E6 | 9104 | 8435 | 2390 | 20F3 | 12075 | 7762 | 2F2B | 1E52 |
| 494 | 15028 | 10787 | 3AB4 | 2A23 | 7514 | 23341 | 1D5A | 5B2D | 26658 | 15761 | 6822 | 3D91 |
| 495 | 21901 | 18400 | 558D | 47E0 | 31510 | 9200 | 7B16 | 23F0 | 21077 | 12697 | 5255 | 3199 |
| 496 | 24566 | 20295 | 5FF6 | 4F47 | 12283 | 27039 | 2FFB | 699F | 15595 | 24850 | 3CEB | 6112 |
| 497 | 18994 | 1937 | 4A32 | 0791 | 9497 | 19956 | 2519 | 4DF4 | 4921 | 15259 | 1339 | 3B9B |
| 498 | 13608 | 17963 | 3528 | 462B | 6804 | 27945 | 1A94 | 6D29 | 14051 | 24243 | 36E3 | 5EB3 |
| 499 | 27492 | 7438 | 6B64 | 1D0E | 13746 | 3719 | 35B2 | 0E87 | 5956 | 30508 | 1744 | 772C |
| 500 | 11706 | 12938 | 2DBA | 328A | 5853 | 6469 | 16DD | 1945 | 21202 | 13982 | 52D2 | 369E |

. . . continued on next page

E

**Table E-1:** PnMaskI and PnMaskQ Values for PilotPn

| Pilot PN | 14-Chip Delay I (Dec.) | 14-Chip Delay Q (Dec.) | 14-Chip Delay I (Hex.) | 14-Chip Delay Q (Hex.) | 13-Chip Delay I (Dec.) | 13-Chip Delay Q (Dec.) | 13-Chip Delay I (Hex.) | 13-Chip Delay Q (Hex.) | 0-Chip Delay I (Dec.) | 0-Chip Delay Q (Dec.) | 0-Chip Delay I (Hex.) | 0-Chip Delay Q (Hex.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 501 | 14301 | 19272 | 37DD | 4B48 | 19006 | 9636 | 4A3E | 25A4 | 11239 | 25039 | 2BE7 | 61CF |
| 502 | 23380 | 29989 | 5B54 | 7525 | 11690 | 29870 | 2DAA | 74AE | 30038 | 24086 | 7556 | 5E16 |
| 503 | 11338 | 8526 | 2C4A | 214E | 5669 | 4263 | 1625 | 10A7 | 30222 | 21581 | 760E | 544D |
| 504 | 2995 | 18139 | 0BB3 | 46DB | 21513 | 27985 | 5409 | 6D51 | 13476 | 21346 | 34A4 | 5362 |
| 505 | 23390 | 3247 | 5B5E | 0CAF | 11695 | 18539 | 2DAF | 486B | 2497 | 28187 | 09C1 | 6E1B |
| 506 | 14473 | 28919 | 3889 | 70F7 | 19860 | 30279 | 4D94 | 7647 | 31842 | 23231 | 7C62 | 5ABF |
| 507 | 6530 | 7292 | 1982 | 1C7C | 3265 | 3646 | 0CC1 | 0E3E | 24342 | 18743 | 5F16 | 4937 |
| 508 | 20452 | 20740 | 4FE4 | 5104 | 10226 | 10370 | 27F2 | 2882 | 25857 | 11594 | 6501 | 2D4A |
| 509 | 12226 | 27994 | 2FC2 | 6D5A | 6113 | 13997 | 17E1 | 36AD | 27662 | 7198 | 6C0E | 1C1E |
| 510 | 1058 | 2224 | 0422 | 08B0 | 529 | 1112 | 0211 | 0458 | 24594 | 105 | 6012 | 0069 |
| 511 | 12026 | 6827 | 2EFA | 1AAB | 6013 | 17257 | 177D | 4369 | 16790 | 4534 | 4196 | 11B6 |

E

## Notes

MOTOROLA

*Appendix F*

# Test Preparation

F

# Test Equipment Setup

## Purpose

This appendix provides information on setting up the HP8921 with PCS interface, the HP8935 and the Advantest R3465. The Cybertest test set doesn't require any setup.

## HP8921A Test Equipment Connections

Table F-1 depicts the rear panels of the HP 8921A test equipment as configured to perform automatic tests. All test equipment is controlled by the LMF via an IEEE-488/GPIB bus. The LMF expects each piece of test equipment to have a factory-set GPIB address (refer to Table F-4). If there is a communications problem between the LMF and any piece of test equipment, you should verify that the GPIB addresses have been set correctly and that the GPIB cables are firmly connected to the test equipment.

Figure F-1 shows the connections when **not using** an external 10 MHz Rubidium reference.

**Table F-1:** HP8921A/600 Communications Test Set Rear Panel Connections Without Rubidium

| From Test Set: | To Interface: | | Connector Type |
|---|---|---|---|
| 8921A | 83203B CDMA | 83236A PCS | |
| CW RF OUT | CW RF IN | | SMC-female - SMC-female |
| 114.3 MHZ IF OUT | 114.3 MHZ IF IN | | SMC-female - SMC-female |
| IQ RF IN | IQ RF OUT | | SMC-female - SMC-female |
| DET OUT | AUX DSP IN | | SMC-female - SMC-female |
| CONTROL I/O | CONTROL I/O | | 45-pin custom BUS |
| 10 MHZ OUT | SYNTH REF IN | | BNC-male - BNC-male |
| HPIB INTERFACE | | HPIB INTERFACE | HPIB cable |
| | 10 MHZ OUT | REF IN | BNC-male - BNC-male |

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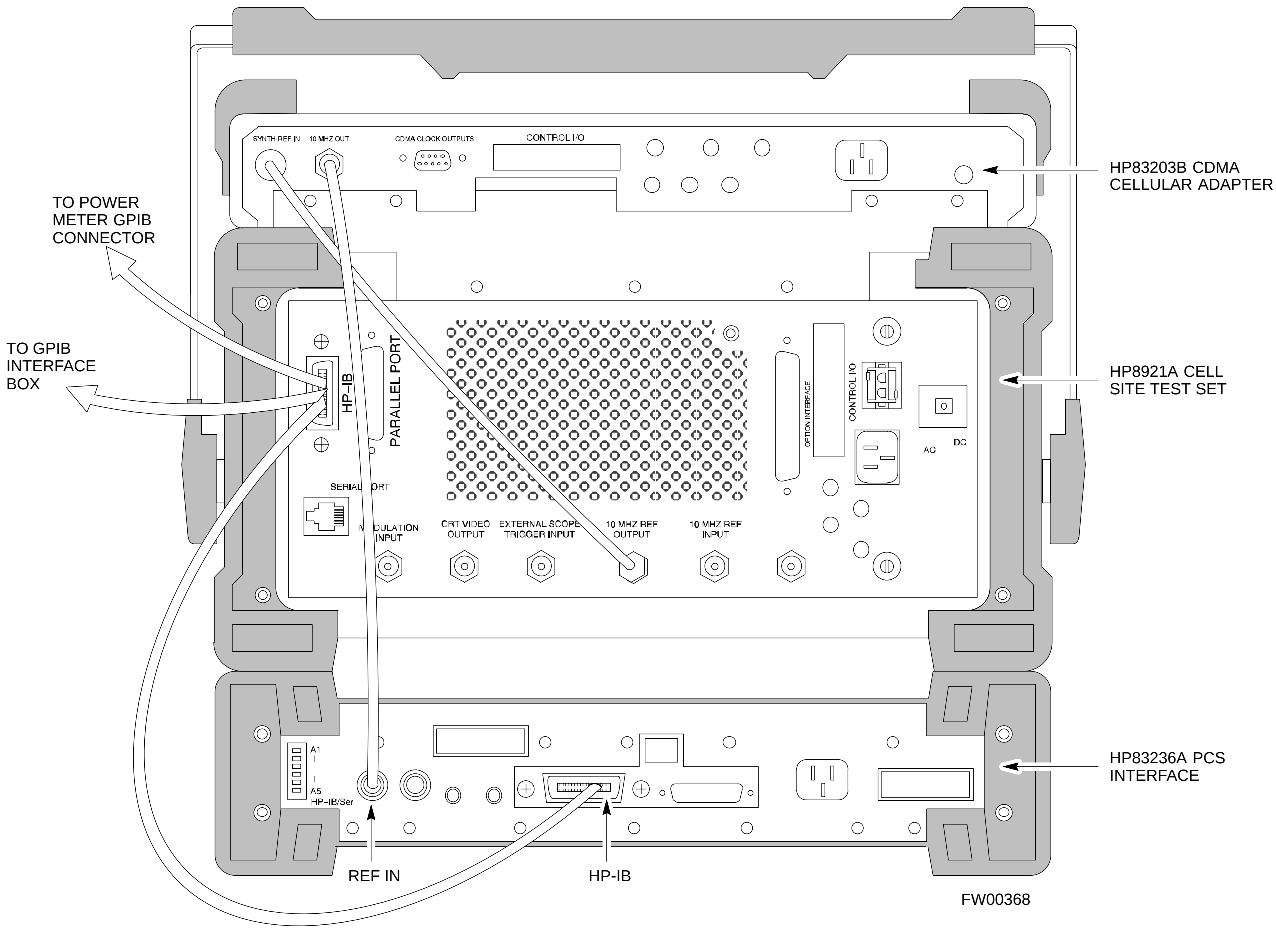
**Figure F-1:** HP8921A/600 Cables Connection for 10 MHz Signal and GPIB without Rubidium




**REAR PANEL**
**COMMUNICATIONS TEST SET**

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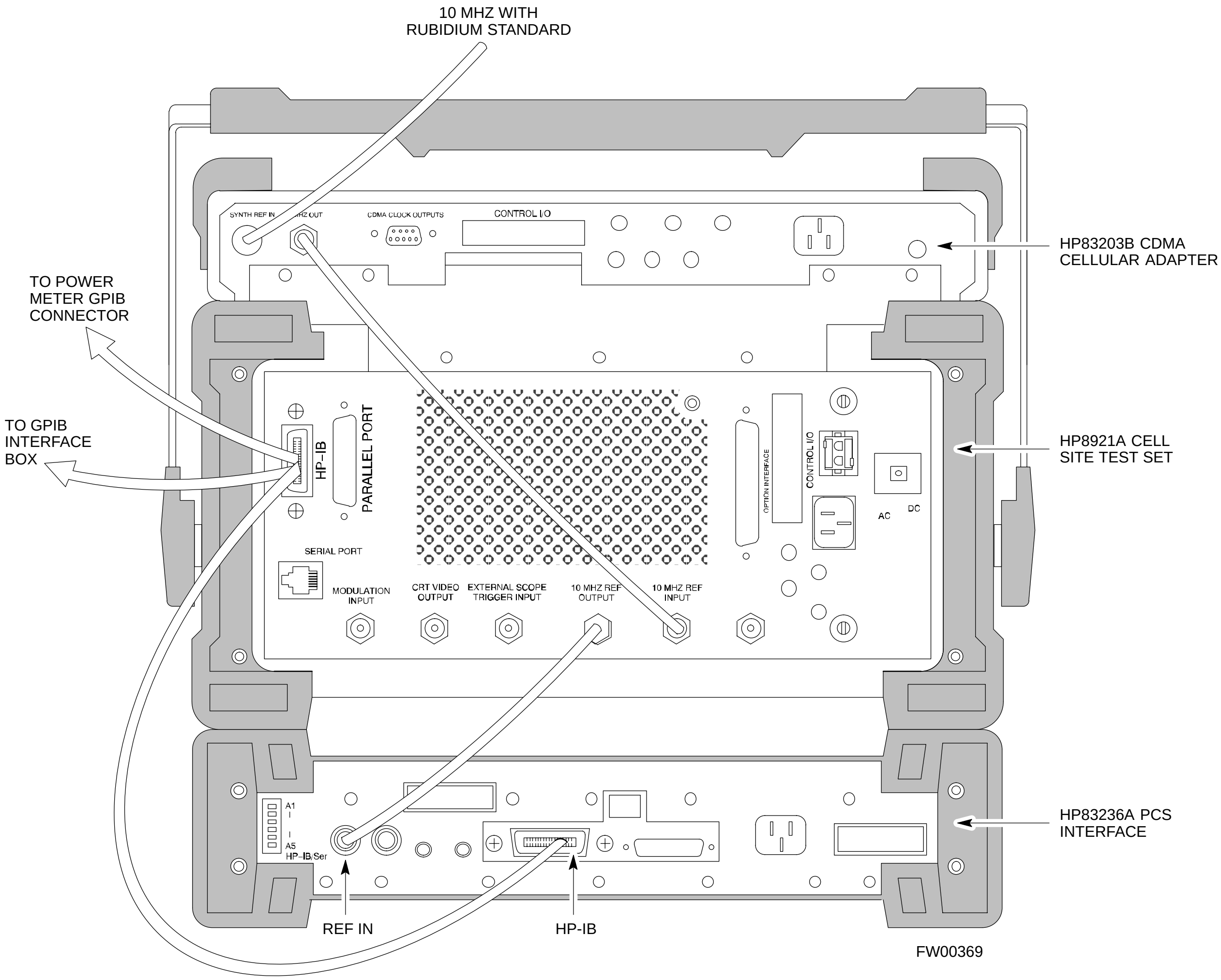
Figure F-2 shows the connections **when using** an external 10 MHz Rubidium reference.

**Table F-2:** HP8921A/600 Communications Test Set Rear Panel Connections With Rubidium

| From Test Set: | To Interface: | | Connector Type |
|---|---|---|---|
| **8921A** | **83203B CDMA** | **83236A PCS** | |
| CW RF OUT | CW RF IN | | SMC-female - SMC-female |
| 114.3 MHZ IF OUT | 114.3 MHZ IF IN | | SMC-female - SMC-female |
| IQ RF IN | IQ RF OUT | | SMC-female - SMC-female |
| DET OUT | AUX DSP IN | | SMC-female - SMC-female |
| CONTROL I/O | CONTROL I/O | | 45-pin custom BUS |
| 10 MHZ OUT | | REF IN | BNC-male - BNC-male |
| HPIB INTERFACE | | HPIB INTERFACE | HPIB cable |
| 10 MHZ INPUT | 10 MHZ OUT | | BNC-male - BNC-male |

**Figure F-2:** HP8921A Cables Connection for 10 MHz Signal and GPIB with Rubidium




**REAR PANEL**
**COMMUNICATIONS TEST SET**

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## HP8921A System Connectivity Test

Follow the steps in Table F-3 to verify that the connections between the PCS Interface and the HP8921A are correct and cables are intact. The software also performs basic functionality checks of each instrument.

| NOTE | Disconnect other GPIB devices, especially system controllers, from the system before running the connectivity software. |
|---|---|

**Table F-3:** System Connectivity

| Step | Action |
|---|---|
| | *** IMPORTANT**<br>- Perform this procedure *after* test equipment has been allowed to warm-up and stabilize for a *minimum of 60 minutes*. |
| 1 | Insert HP 83236A Manual Control/System card into memory card slot. |
| 2 | Press the **[PRESET]** pushbutton**.** |
| 3 | Press the Screen Control **[TESTS]** pushbutton to display the “Tests” Main Menu screen. |
| 4 | Position the cursor at **Select Procedure Location** and select it by pressing the cursor control knob. In the Choices selection box, select **Card.** |
| 5 | Position the cursor at **Select Procedure Filename** and select it by pressing the cursor control knob. In the Choices selection box, select **SYS_CONN**. |
| 6 | Position the cursor at **RUN TEST** and select it. The software will prompt you through the connectivity setup. |
| 7 | Do the following when the test is complete,<br>• position cursor on **STOP TEST** and select it<br>• OR press the **[K5]** pushbutton. |
| 8 | To return to the main menu, press the **[K5]** pushbutton. |
| 9 | Press the **[PRESET]** pushbutton**.** |

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## Setting HP8921A and HP83236A/B GPIB Address

Follow the steps in Table F-4 to set the HP8921A GPIB address.

**Table F-4:** Setting HP8921A GPIB Address

| Step | Action |
|---|---|
| 1 | If you have not already done so, turn the HP8921A power on. |
| 2 | Verify that the GPIB addresses are set correctly.<br>• HP8921A HP-IB Adrs = 18, accessed by pushing **LOCAL** and selecting **More** and **I/O Configure** on the HP8921A/600. (Consult test equipment OEM documentation for additional info as required).<br>• HP83236A (or B) PCS Interface GPIB address=19. Set dip switches as follows:<br>- A1=1, A2=1, A3=0, A4=0, A5=1, HP-IB/Ser = 1 |

## Pretest Setup for HP8921A

Before the HP8921A CDMA analyzer is used for LMF controlled testing it must be set up correctly for automatic testing.

**Table F-5:** Pretest Setup for HP8921A

| Step | Action |
|---|---|
| 1 | Unplug the memory card if it is plugged in. |
| 2 | Press the **CURSOR CONTROL** knob. |
| 3 | Position the cursor at **IO CONFIG** (under **To Screen** and **More**) and select it. |
| 4 | Select Mode and set for **Talk&Lstn**. |

## Pretest Setup for HP8935

Before the HP8935 CDMA analyzer is used for LMF controlled testing it must be set up correctly for automatic testing.

**Table F-6:** Pretest Setup for HP8935

| Step | Action |
|---|---|
| 1 | Unplug the memory card if it is plugged in. |
| 2 | Press the **Shift** button and then press the **I/O Config** button. |
| 3 | Press the **Push to Select** knob. |
| 4 | Position the cursor at **IO CONFIG** and select it. |
| 5 | Select **Mode** and set for **Talk&Lstn**. |



## Advantest R3465 Connection

The following diagram depicts the rear panels of the Advantest test equipment as configured to perform automatic tests. All test equipment is controlled by the LMF via an IEEE-488/GPIB bus. The LMF expects each piece of test equipment to have a factory-set GPIB address (refer to Table F-7). If there is a communications problem between the LMF and any piece of test equipment, you should verify that the GPIB addresses have been set correctly and that the GPIB cables are firmly connected to the test equipment.

Figure F-3 shows the connections when **not using** an external 10 MHz Rubidium reference.

**Figure F-3:** Cable Connections for Test Set without 10 MHz Rubidium Standard

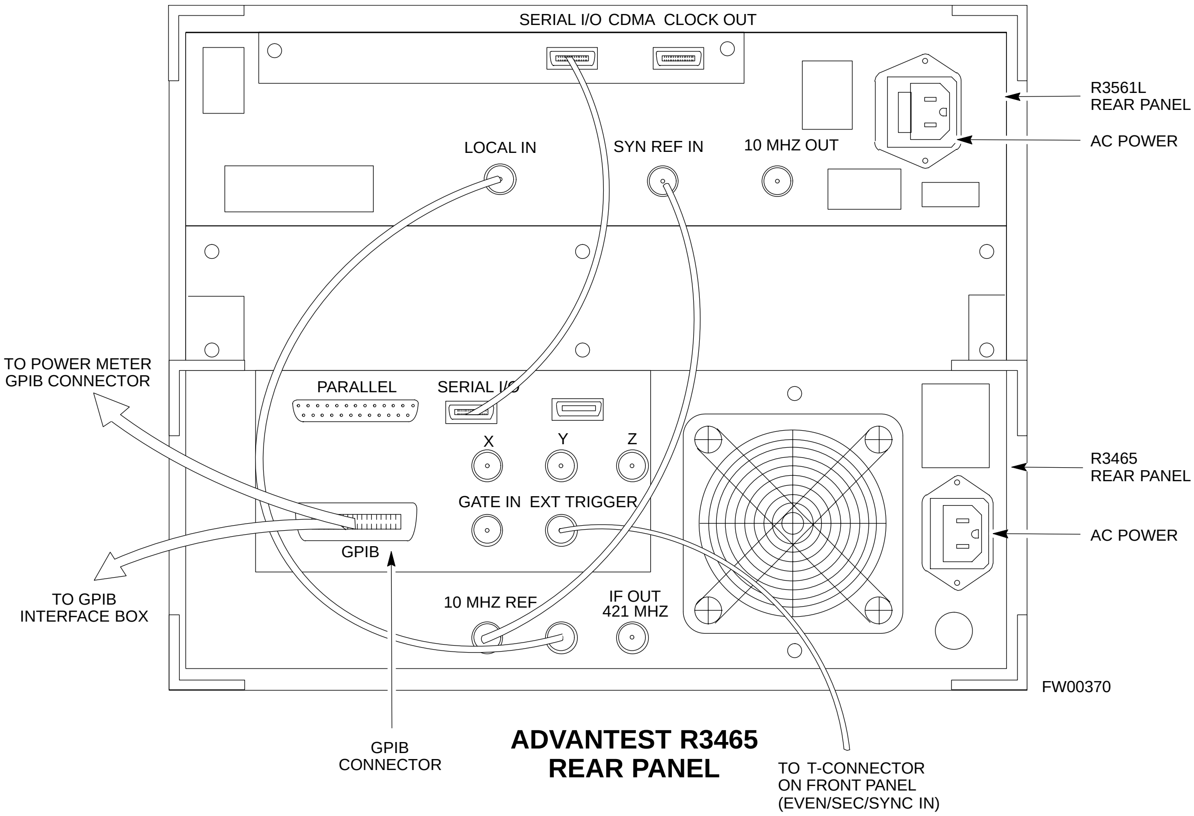


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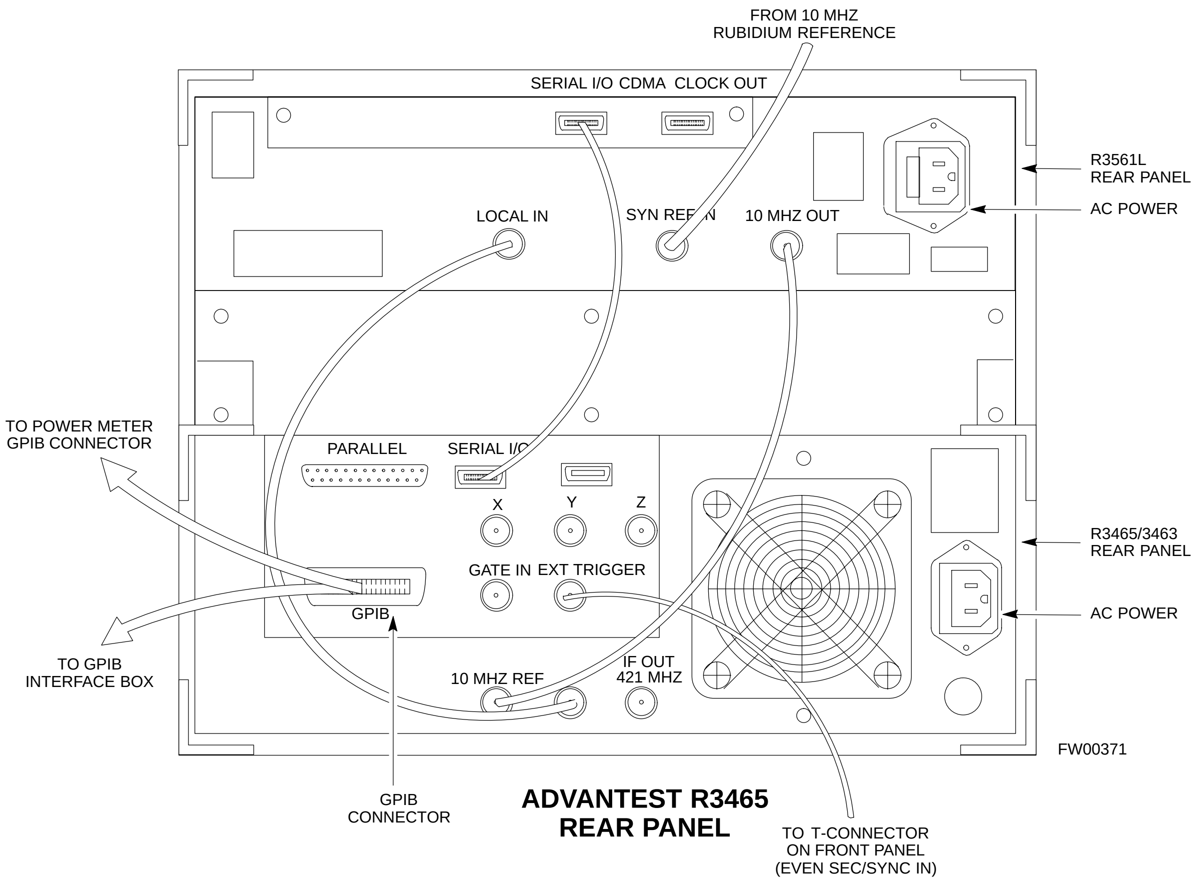
Figure F-4 shows the connections when **using** an external 10 MHz Rubidium reference.

**Figure F-4:** Cable Connections for Test Set with 10 MHz Rubidium Standard

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## R3465 GPIB Address & Clock setup

Follow the steps in Table F-7 to set the GPIB address and clock for the **Advantest** R3465 equipment.

**Table F-7:** Advantest R3465 GPIB Address and Clock Setup

| Step | Action |
|---|---|
| 1 | Communications test set GPIB address=**18** *(perform the following to view/set as required)*<br>Perform the following to set the standard parameters on the test set:<br>• Push the **SHIFT** then **PRESET** pushbutton (just below the CRT display).<br>• Push the **LCL** pushbutton (CW in Measurement just below the CRT display)<br>- Push the **GPIB and Others** CRT menu key to view the current address.<br>- ***If required,*** change GPIB address to **18** *(rotate the vernier knob to set, push the vernier knob to enter)* |
| 2 | Verify the current Date and Time in upper/right of the CRT display (*perform the following to set if required)*<br>Communications test set GPIB address=**18** *(perform the following to view/set as required)*<br>• Push the **Date/Time CRT** menu key<br>• ***If required,*** change to correct Date/Time *(rotate the vernier knob to select and set, push the vernier knob to enter)*<br>• Push the **SHIFT** then **PRESET** pushbutton (just below the CRT display). |

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## Pretest Setup for Advantest R3465

Before the Advantest R3465 analyzer is used for LMF controlled testing it must be set up correctly for automatic testing.

**Table F-8:** Pretest Setup for Advantest R3465

| Step | Action |
|---|---|
| 1 | Press the **SHIFT** button so the LED next to it is illuminated. |
| 2 | Press the **RESET** button. |